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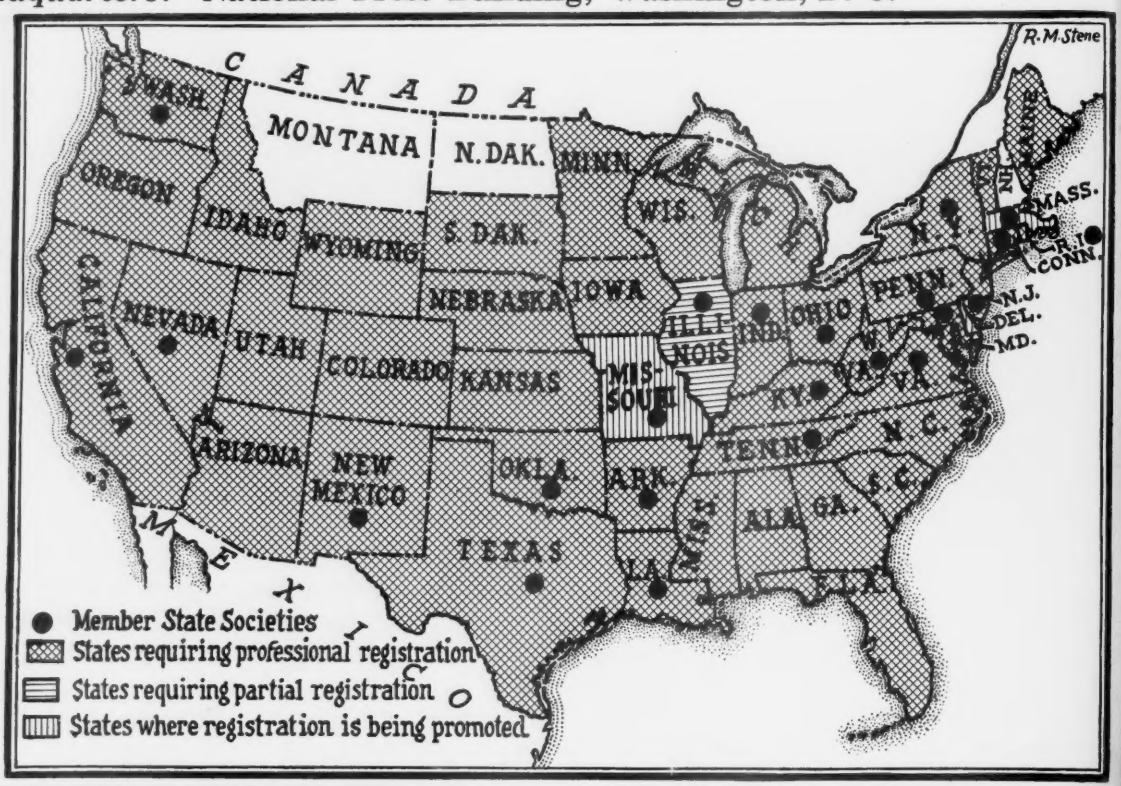

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The Cover

Our cover, the State Capitol Building in Trenton, New Jersey, is used this month to call attention to the fact that N.S.P.E. will hold its next annual convention in the State of New Jersey in April of 1942. The Capitol Building overlooks the Delaware River and is not so far distant from the point at which General George Washington and his Continental Army crossed that River on the historic occasion recorded in all American histories.

EDITORIAL • • •

Let Us Clarify the Record

The need of technically trained men in the National Defense Program is self-evident. The need for avoiding the disturbance of the normal educational processes in training such technical men is vital. The engineering profession is advocating and will promote engineering training for young men adequate to permit them to fit into the National Defense Program in their proper places until there has been welded together a national coat of armor that is impregnable.

In the initial haste to do these things, we may become over-zealous, which is natural, but so long as we "keep the record clear" and let the individual receiving emergency technical training know exactly what degree of training he is receiving and know into which niche he is to fit, then there should be no future disappointment or hurt to the individual who may misunderstand that such emergency technical training fits him to practice a profession in lieu of a standard college technical course.

For example, one of the large eastern colleges announces it "will train 10,000 engineers." When this announcement is analyzed, it develops that the college is doing a perfectly worthy thing. It will train thousands of youths in certain standard accredited engineering studies which are but a part of a standard engineering course. This is creditable. But, let us not permit the student in these courses to understand that once he has satisfactorily completed them he becomes a full fledged "engineer," but rather that he has taken but a part of an engineering training which may eventually fit him to be a Professional Engineer, if he adds to such defense training the required balance of such accredited courses in an accredited college or university, or adds to his defense training adequate engineering experience in the future. Let him know he has the basis of training for becoming a competent engineer and that by further work after the end of his emergency service to his nation, by further study and effort on his part, he may reach the status of complete professional standing and enjoy the responsibilities and benefits of the profession. We encourage youth to take this technical training, take its place in the whole program, and when those who through such experience later feel they might become licensed Professional Engineers, may they carry on to that ultimate goal.

ROBERT HALL CRAIG

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OF
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Elected at the Sixth Annual Convention in Chicago, Ill.
January 30, 31 and February 1, 1941

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Resolutions Adopted by the Annual Convention of the National Society of Professional Engineers in Chicago, Illinois February 1, 1941

Number 1

WHEREAS, this the sixth annual meeting of the National Society of Professional Engineers has been enriched and vitalized by being joined with the 56th annual meeting of the Illinois Society of Engineers, Inc., and

WHEREAS, the members of the National Society collectively and individually have greatly enjoyed the hospitality of the Illinois Society:

THEREFORE, BE IT RESOLVED, that the National Society of Professional Engineers hereby expresses its thanks to the Illinois Society of Engineers, its officers and the local committee in charge of arrangements, for their friendly co-operation and effort which have made this convention an outstanding success.

Number 2

WHEREAS, the National Society of Professional Engineers has enjoyed a very profitable and successful sixth annual convention in the Hotel Sherman due in large part to the hospitality and co-operation of the management of the hotel in furnishing facilities,

THEREFORE, BE IT RESOLVED by the National Society of Professional Engineers that it hereby expresses its thanks and appreciation to the management and operating personnel of the Hotel Sherman for their effective courtesy.

Number 3

WHEREAS, court processes and procedures pertinent to the obtaining of court jurisdiction in protecting patents, has for many years resulted in shifting inventors from court to court, and has often thwarted the ends of justice,

NOW, THEREFORE, BE IT RESOLVED that the National Society of Professional Engineers at its annual convention held in Chicago, January 30, 31 and February 1, 1941, express its belief that public interest requires the correction of existing laws, and does instruct its Board of Directors to sponsor, in collaboration with other groups, measures tending to alleviate the evils and inconsistencies apparently inseparable from the present laws of patent and copyright litigation.

Number 4

WHEREAS, the world seems now, as never before, to be faced with revolutionary tendencies of the most serious nature in governmental and social order, and

WHEREAS, the engineer will become more and more a factor and influence in these problems, and

WHEREAS, the young engineering student in his formative years can be so easily guided, instructed and influenced along the paths of good citizenship, ethics and morality leading to his own betterment and the betterment of mankind, and

WHEREAS, it has been the general policy of engineering schools to subordinate almost to the point of extinction the teaching of personal, moral, professional and political ethics in their zeal toward higher technical training;

THEREFORE, BE IT RESOLVED that this society earnestly urges that all engineering schools carefully select one or more outstandingly qualified men to instruct the engineering students in class and out of class in these highly important matters now so sadly neglected and that this subject be so widely discussed as to lead more certainly to an effective solution of the problem in all the schools of our nation.

Number 5

WHEREAS, the registration of Engineers as an aid to the safeguarding of life, health and property is now a well established practice, and

WHEREAS, the continued and increased effectiveness of the various state engineering registration laws depends largely upon maintaining a high degree of technical proficiency of engineers, and

WHEREAS, such technical proficiency is based upon a thorough understanding and mastery of the mathematics, chemistry and their applications, and

WHEREAS, the most effective means yet devised to determine such understanding and mastery is by written examination, and

WHEREAS, other professions have found that the fairest time to test such basic proficiency is immediately after graduation from college;

THEREFORE, BE IT RESOLVED, that the National Society of Professional Engineers, in convention assembled, hereby endorses the principle of allowing engineering college graduates to take examinations in the said mathematics, physics, chemistry and that study of their application usually included under the term mechanics immediately after graduation from college and that a second later examination in the branch of engineering in which the applicant wishes to practice be a further requirement for admission to practice as a Professional Engineer.

Number 6

WHEREAS, the Morrill Act, passed during the Civil War, established in several states of the Union institutions of higher learning for the fostering of agriculture and the mechanic arts (engineering) and

WHEREAS, at numerous times since then, the Congress has sponsored development of agriculture, as in the Hatch Act of 1887, and subsequent Acts, whereby numerous states have agricultural experiment stations, and

WHEREAS, no similar sponsoring of the mechanic arts—for instance engineering—has been enacted so that research and development in engineering could receive its proper recognition, and

WHEREAS, the National Defense would be greatly assisted by Congressional aid to the engineering experiment stations of the various engineering colleges of the United States, and

WHEREAS, research is needed for the purpose of aiding in measures for National Defense by the development and testing of new devices and materials and by directing natural resources to that end, and at all times to increase industrial employment and to enhance national prosperity by aiding and promoting research in the engineering experiment stations connected with colleges and schools of engineering in the several State and Territorial universities and colleges and for other purposes;

THEREFORE, BE IT RESOLVED, that the National Society of Professional Engineers, in regular convention assembled, does hereby endorse the Green bill, H.R. 2692 and does respectfully urge its enactment into law by the 77th Congress.

BE IT FURTHER RESOLVED, that the National Society of Professional Engineers endorses the general principle of developing means of extending aid to the engineering experiment stations in privately endowed colleges and schools of engineering.

Shadows Of Coming Events Affecting Engineers

"Coming events cast their shadows before"—"Lochiel's Warning" by Thomas Campbell

***Talk given by* DEAN THOMAS R. AGG**

of the Division of Engineering, Iowa State College of Agriculture and Mechanic Arts, Ames, Iowa at joint annual meetings of Illinois Society of Engineers and National Society of Professional Engineers, Chicago, Illinois, January 30, 1941

THE invitation to address this meeting specified that I was not to talk on an engineering subject. Accordingly I have elected to call your attention to certain shadows that seem to suggest coming events of some interest to engineers. I do not suggest that these events are desirable or undesirable or that I favor them or oppose them. I merely bring them to your attention in the hope of starting a train of thought. You may even decide that there are no such shadows.

Nearly five hundred years ago the English courts held that certain businesses were indued with a public interest and, therefore, subject to a certain degree of regulation. Whereupon there appeared a shadow no larger than a man's hand to which no one paid any particular attention. As the years have passed additional types of businesses have been added to the category of those indued with the public interest until at the turn of the century there was a considerable list of such businesses. Most of these were of the type we have become accustomed to calling public utilities. In more recent years whole industries have been added to this category, such as the coal industry, the brokerage business, milk production and distribution in certain areas, and public housing.

It seems quite inevitable that additional businesses will be added to this category, and it is perhaps to be expected that eventually most businesses will be considered as indued with a public interest and be subjected to regulations, including the necessity of securing a permit to establish or expand a business. This will inevitably include those enterprises that employ engineers and the independent engineering companies. The engineer needs to consider what will be the condition of employment when this situation crystallizes.

The engineer has correctly contended that in certain instances the work of the engineer is indued with the public interest and justifies the requirement of a license before being allowed to practice in certain types of positions.

These laws are administered by engineers and generally with an eye to the public interest. But here also there is a shadow. In some states these laws are being used for purposes of social control and the protection of home folks from the competition of newcomers. Here we find that a law enacted in the guise of protecting the public is being used to protect somebody's job. Such administration is entirely foreign to the philosophy of engineering that has heretofore prevailed but strictly in accordance with the spirit of the times.

About fifteen years ago there was established what was known as the Railway Labor Board, whose authority covered all of the employes of the common carrier railroads. That precedent was followed in the creation of the National Labor Relations Board with authority to enforce the principle of collective bargaining in industry and commerce; and now the shadow is sufficiently clear that the portent for the future should be quite apparent. The logical development for the future will be for this law to be expanded to include all who are gainfully employed, which will force engineers into collective bargaining groups. Indeed many engineers are already in such groups.

Many years ago there were enacted laws dealing with hours of labor and designed to prevent child labor. These laws were gradually expanded in scope and their enforcement strengthened with indifferent results so far as child labor was concerned. A few years ago there was enacted the Wages and Hours Act, which, as you know, specified maximum hours and minimum wages for many categories of workers.

These two acts cast a shadow of such clarity that the conditions under which men will labor in the future ought to be easy to predict. These laws will doubtless be expanded to include many additional classes of employees in all sorts of positions. Certainly the engineer, if he is not already covered, must expect that eventually he will be. Moreover, if it is in the interest of the public to provide minimum wages, there is no reason to doubt it will logically follow that maximum wages will also be fixed by law. As a matter of fact, maximum salaries have already been fixed by official regulation in several types of positions, and engineers in the public service in certain jurisdiction are subject to administrative or legislative limits on maximum compensation.

This prospect and its alternatives involve grave questions that ought to be considered by all-inclusive organizations of engineers such as the state engineering societies. If the engineers in an industrial plant become a part of the bargaining unit, how will they fare? Will they find acceptance and understanding? If the engineer does not become a part of the bargaining unit will his economic welfare be lost to sight in the pressure from other directions? Can he form a bargaining unit of his own that will really be effective? Some decision should be reached in these matters within the next two or three years or there is likely to be serious discrimination against the engineers.

As early as about 1800, one of the states requested and received a grant-in-aid for public improvements on the grounds that such a grant was politically expedient. While the sum involved was not more than three or four thousand dollars, this event cast a shadow which may not have been noticed by the people but certainly was by their respresentatives in Congress.

Grants-in-aid to the states soon became common and by 1900 were available for numerous construction projects on rivers, harbors, and public highways. The Reclamation Service was established for the purpose of reclaiming arid lands, and here again there have been enormous grants-in-aid from the Federal government for work to be done in the several states. In the past decade Federal aid has been granted in the construction of public buildings including schools, airports, every conceivable sort of municipal improvement, highways, flood protection projects, harbors, and a long category of similar construction. In fact, there has been comparatively little public works construction during the past five years except that for which there was a grant-in-aid from the Federal government. The effect of this on the

(Continued on page 23)

The Engineers' Preparedness

By **PROFESSOR C. HALE SUTHERLAND**

Head of Department of Civil Engineering, Lehigh University, Bethlehem, Pennsylvania at National Society of Professional Engineers' Annual Convention, Chicago, Illinois, Friday, January 31, 1941

IN these days of world crisis a single theme engages our attention the length and breadth of our land—the defense of our democracy. There is general agreement that democracy is menaced but the engineering observer must be impressed by two strange facts: there is surprisingly small attempt to analyze and estimate the nature of the forces which oppose democracy, and also an astonishing amount of naive assumption as to the nature of the thing we call democracy. Although we are not by training or activity social scientists we have been compelled to give large consideration to the social results and interrelations of our work this last decade and we have formed the habit in this, as in our own professional field, of going always to basic principles when confronted by a problem. Certainly much or most of the current discussion of the world crisis fails entirely to satisfy this demand of engineering thought.

There are many who would say that this is no time for inquiry: a crisis confronts us and the call is for action. But what action? Action is fatally inexorable and while measures of physical defense are proceeding, measures which have general popular support, there is still opportunity to attempt basic evaluations which may determine further action to the end that it be wise and that which is most certain to advance human welfare.

On the material side the defense demands upon our profession are relatively simple and definite. The extension of production plant and equipment, production problems in industrial engineering, the construction of cantonments, military roads, fortifications, the preparation of our cities to withstand aerial bombardment: for such tasks we are ready by virtue of our everyday professional activities. But the day is past when the engineer is satisfied to act simply as the hired technician called in by the owner as is the mechanic by the householder with a leaky roof. We realize fully that modern complex mechanized civilization with its standards of human living and welfare so immeasurably higher than those of a century and a half ago, has come into being through the work of the engineer. We realize that through the applications of technology we are on the eve of a radically new world situation, a condition of plenty, of abundant supply for all human needs and for an increasing proportion of our luxury demands. And we are sadly distressed that the world fails to exhibit that wisdom and good will required to carry civilization through peacefully to that new order of abundance. The existence of our own National Society of Professional Engineers is evidence that we seek to assume more of leadership in this world, that we endeavor to shape the course of progress so that our aspirations for a better social order may be realized. We are not content, accordingly, to confine our inquiry to purely engineering defense problems: instead we set ourselves these questions. What is the nature of the world disturbance today? Is this disturbance external to democracy? With these questions and their corollaries answered the nature of the preparedness incumbent upon us as engineers should become plain.

Such easy explanations as those which assert that we are beset by mad dog nations lusting for conquest and world enslavement, or that abroad we are witnessing simply another struggle of rival imperialisms, one explanation a favorite of the interventionist and the other of the isolationist, we reject as too simple for credibility. Each siezes upon an obvious phase of the business and magnifies it beyond all proportion.

Our most popular explanation is that here we have a world struggle between democracy and authoritarianism; two opposing basic ideologies as to the organization of national groups are at death grip. The people of the dictator nations, it is argued, have little aptitude for democracy, have wearied of such attempt as they have made in that direction because they have been unable to make that form of organization yield them economic and political security. They have decided that discipline under strong leadership yields more of plenty and security than does democracy, and that the price of personal liberty is cheap for the gains purchased. It is acknowledged that these nations exhibit an ardent patriotism, an intense loyalty to the group; and, it must be confessed, a professed contempt for the democracies as decadent, soft, self-seeking, corrupt and rotten, about to fall apart of their own weaknesses.

In this country the usual phrasing of this explanation have yielded a curiously simple and happy picture of the so-called democracies as composed of unified liberty loving people whose institutions to a large degree embody the democratic ideal. Democracy is defined in strongly individualistic terms; rights to opinion, speech, religion, enterprise are much more stressed than obligation to serve the group. We are shocked that such terrible charges are levelled at us by the fascists but hardly horrified for we do not believe them. It would be well to pause over these charges for here we are approaching close to the deeper issues involved in the world disturbance.

Some of us have been very much excited of late to discover that our textbooks of history and government have a habit of pointing to alleged contrasts between precept and practice in this admittedly democratic commonwealth, a disturbance of soul sometimes rising to the pitch of hysteria and repetition of the intolerances of minority opinion which disgraced so many of our communities in the last war. Nevertheless some scholarly students of social phenomena have an unpleasant habit of writing chapters in their texts headed "the decline of democracy," chapters which they document in very forceful fashion. It is not refutation to dub these writers "reds" for their personal political philosophies are often far from radical.

On the conservative pages of a recent *Saturday Evening Post** Will Durant, a philosophic interpreter of generally acknowledged wisdom, has given a very wise assessment of our democracy, a view with which many sociologists would concur. His argument, in brief summary, declares that liberty was once a beneficent stimulus and now is bringing disorder and disintegration. Freedom of thought has ended in the destruction of old customs, traditions and beliefs which were a stabilizing element in society. Science has been hypnotized by its mechanisms and methods to a point where it can see nothing in the universe but machines. Philosophy has ended in cynicism

* Self Discipline Or Slavery," issue of January 18, 1941

and skepticism. Education has ceased to discipline men in character and has come to confine itself solely to the task of equipping the intellect for self-seeking competition. Moral restraints have been increasingly rejected in the name of the free right of the individual. Art, literature and music have been Bolshevized. Free competition in the economic field has led to ever fiercer struggle, class war, depressed classes, and finally resulted, with the depression, in the pauperization of large elements of our population. In government the spoils system has undermined the competence and integrity of public administration. The golden age of liberty seems to be ending in chaos. But, he concludes, we cannot esteem democracy a failure until it has been shown that we cannot yet, in the fact of challenge, discipline ourselves into virile health and impregnable power. The issue is still in the making.

It is easy, and we may be thankful accordingly, to enumerate bright pictures in our social landscape which Durant has not here mentioned, but it is hardly possible to refute the specific judgments; and these specific judgments cover the main field of our social scene. If we wish the confirmation of a professional sociologist we have similar judgments from Professor Charles A. Ellwood of Duke University, a man of international reputation, former president of the American Sociological Society and of the International Institute of Sociology; his recent book, *THE WORLD'S NEED OF CHRIST* asserts that in a wide recovery of the enthusiasm and ethics of Jesus alone may the world escape from its confusions. Spengler has won few converts to his curious doctrine of cycles of civilization, but none have been able to refute the pessimistic judgments of his monumental, *DECLINE OF THE WEST*.

A marked characteristic of our western world is the increasing complexity of its interrelationships and organizations in all the ranges of life. Our modern large scale industry demands great cooperativeness on the parts of workers and management, both one with the other and in the intimacies of each group's special function. Our great cities demand cooperativeness, neighborliness, in order to have efficiency, order, general well-being within their borders. The interrelations of nations demand cooperativeness for peace and mutual well-being. It is lack of power to cooperate which is tearing society apart. Gerald Heard, a social observer of profound understanding, asserts that we have carried western society to as high a degree of organization as is possible for people characterized as we are by intense individualism and small cooperativeness, that the demands of this complex organization upon our operating faculty exceed our possible response.

Much current discussion of the national emergency is hopelessly shallow, even futile. In the light of the judgments we have assembled it is plain that it is far from the truth to assert that the great task today is to preserve our nation from disruption from without. We all agree that it is exposed to attack from without but it is also exposed to attack from within. We all realize that strong groups in this country hold to fascist doctrines openly; other large groups exhibit indifference, even doubt as to the truth of the democratic dogma. Current magazine discussions have pointed to cynical disesteem of democracy on the part of many of our youth. Large elements of our population have long been indifferent citizens; they live with us but they are not of us nor do they help in our process of self government. Analysis of our recent election reveals that a very large group has ceased to think in terms of that classless society which is the democratic ideal; class consciousness and class conflict are with us. Can all of these ills of democracy be traced to a single cause? If so the task before us is made far more direct and simple than it now appears.

As first witness in identification of the assassin of democracy let us call in Professor Mortimer J. Adler of the University of Chicago, who picks up Will Durant's estimate of the course of education and amplifies it*. He asserts that for forty years academic opinion in Europe and America, through its exclusive trust in science, has drawn the illogical and unwarrantable conclusion that only by the scientific method may truth be found, that reason in itself is helpless to arrive at truth, and consequently has come to the opinion that right and wrong have no absolute significance; with result that the intellectual of today does not take any moral issue seriously. President Hutchins of Chicago, repeats this charge and asserts that basic to the belief in democracy is belief in the objective reality of right and wrong, without which belief the rights of man are at the caprice of the mob. And like Adler he holds that for forty years our intellectual leaders have been denying this fundamental. Thus both men are of the opinion that the accepted learning of our times, through a false faith in science, or rather, a misunderstanding of the logic of science, has come to deny the ethical base of democracy.

Our forefathers established this democratic commonwealth on what was essentially a religious perception. The naturalism of Rousseau entered in to contaminate the vision, it is true, but at its depth these founder fathers held to a religious concept regarding the nature of man, the faith that a spark of the Divine is to be found in each of us. With the rise of science and applied technology these last one hundred years our intellectual world has come to reject the philosophical and theological form in which 18th century religion found expression and at the same time the faith which the theology attempted to explain and define. At the same time this past century has witnessed a large intensification in the keenness of our individualistic self-consciousness, a speeding up of the intensity of our competition one with the other, and group with group. This picture of the decline of faith and the rise of stark individualism is drawn with power by Gerald Heard in his study of social change, *THIRD MORALITY*. The state of health of the Church today is a question hotly debated: suffice it here to note that so scholarly and sympathetic an observer as Professor Ellwood considers that the Christian Church has failed in its mission and unless revitalized into power, is destined soon to disappear before the paganizing flood now loose upon us.

The advance of our argument to a stage which claims that the essential cause of the world disturbance may be traced to the decline of religious faith coincident with the rise of modern science, may easily lose us in misunderstanding or even in acrimonious discussion. The careful reader will have noted that no question of theology or ecclesiastical organization has been raised; in fact the issue centers in religion itself and not in any one of the dozen major faiths which seem to compete for men's loyalties. All the great world faiths have taught more or less clearly the kinship of man and the Supreme and this is the essential base of democracy. Thus we who are religionists find ourselves united on one side in common confronting of materialistic scientism (the word coined by Adler to denote this misuse of science which has led to the decline of faith).

This decline of faith is a European as well as an American phenomenon and so it would seem that in

* "This Pre-War Generation," *Harper's Magazine*, October, 1940

Europe and in America we must be witnessing the same logical outworking of ideas into social happening but at different stages of development. Authoritarianism flowered first where democracy was weakest, newest, least understood. It came as the need of group discipline became evident in the interest of security, when freedom seemed to have resulted in chaos. We have been witnessing in this country for the last decade at least the same rising demand for a strong disciplinary central government to curb the forces which in freedom the masses have felt to be unfriendly to collective security. And now as external assault threatens, this authoritarian trend intensifies amidst a noisy fanfare of praise for democracy which often seems more of noise than substance.

Our search for root causes has led to realms far from the drafting room and the design office. We who labor in these places realize that the civilization which demands our labors is threatened with a collapse which may conceivably destroy us and our function. Or we may be destined to become the technical slaves of an authoritarian state. What preparedness is possible for us as engineers against that which menaces?

It is manifest that a democracy-destroying force which consists essentially in man's loss of faith in his own potential divinity and worth, in the brotherhood of men, corollary of the first, must be opposed by us, acting not as engineers but as human beings asserting their God-implanted faith. But how are we to step out from the enervating circle of materialistic unbelief in which we have been caught with all our fellows? How are we to rise superior to the spirit of our times, the prevailing intellectual judgments of the educational system which trained us and the community of which we are a part? Long habit of thought may make us deaf to pleas to return to faith and to the Church. The imminence of world collapse, however, may well make us pause and seriously consider.

The problem with which we are faced is psychological doubly, first as to problem of moving from skepticism to faith, and second, the problem of the true potential nature of man. Gerald Heard, Evelyn Underhill, Rufus Jones, Baron von Hugel, and other competent students point to the psychological phenomenon of mystical consciousness or saintship as furnishing objective evidence of the nature of the stages of consciousness which lie ahead of man in his evolutionary unfoldment. Saintship is characterized by a vivid sense of unity with God and man, sense of love for man, ardent desire to serve the common good rather than egotistical desire. Evidently as we rise toward that exalted state of being we become more competent as useful citizens of a democracy. For a certain few amongst us these writers are evidently opening up a practical road of development and such folks will be centers of health contagion in our ailing democracy. For the more earth-bound rest of us these writings on mysticism and the testimonies of competent walkers of that path will inspire devotion and aspiration which will go far to lead us in our turn to become helpful citizens, devoted to the spirit of pure democratic patriotism. Those who are appealed to by this phenomenon of the spirit-kindled consciousness quickly realize that they have moved from under the dominance of scientism; they are on the way to become saviours of democracy.

The intellectually minded amongst us will find in consideration of the course of evolution of life, from the lowest up to man, a clue to the meaning and reason of the present human situation. Gerald Heard brings together the arguments in his *SOURCE OF CIVILIZATION* and considers other supporting evidence in *PAIN, SEX AND TIME*. Recent anthropological evidence would indicate that man in his primitive civilization, notably that of the Indus valley, was characterized by a group-mindedness and concern which sufficed to cement a complex social system in security and smooth order without reliance upon force. A certain alertness and adaptability were present which are the prime essentials in a species which is continuing in progressive evolution. However in some mysterious way there came a hardening of consciousness, an intensification of egotistical individualism which has continued with vigor to the present, so that man now exhibits characteristics which tend to mark him as a creature close to the end of the possibility of evolutionary progress. And we remember that giant species of former ages specialized in efficiency, lost adaptability, and died. This egotistical specialization which marks us today is accompanied by closure of the consciousness to awareness of our inner or higher selfhood, the Divine Spark of the religionist. And so we lose faith in this, the basis of democracy.

In Heard's thinking the only way out from the impass of excessive individualism is by the way of religion, the reeducation and redirection of consciousness through the age-old technique of prayer and meditation, coupled with renewed devotion to ethical idealism and social service.

The religious thinker will find in Heard's marshalling of scientific evidence striking confirmation of certain strange doctrines relative to the "fall of man" and to man's "sinful nature" which thus take on psychological rather than theological significance. It is evident that Heard gives no comfort to the shallow humanism which characterizes much of current liberal thinking, but that he most definitely asserts the profoundly optimistic doctrine of the potential divinity of man.

Others of us will follow the clues in interpretation of man and his place in the universe which are to be found in the Transcendentalism of Ralph Waldo Emerson and in the great number of writers and schools which have found large inspiration here. Others will return to our churches and find to our surprise that in the years of our neglect a great change in mental climate has taken place, and will find a quickening vigor of intellectual faith in the spiritual interpretations of life competent to send us out as agencies of a reviving democracy.

These are tremendously stirring days to be alive because we have not only the challenge of the present world situation but also the inspiration of a changing intellectual world. The new science which began with Roentgen and the X-Rays has ended the claim of materialism and even we who are not philosophers should have no trouble in rediscovering the validity of the spiritual interpretations even though our official intellectual leaders strangely lag in this task of rephrasing the philosophy of science.

One more question remains. Granted that we recover faith in the democratic dogma, how may we transmit that faith so that we all shall be so possessed and the people of these United States may stand in unity before the world, supporters of a regenerated democracy purified of the inequities which now so largely prevail? For such transmission we have two means at our hand, the church and education. The wise leaders of Judaism, of Catholicism and Protestantism in this country see no possibility of any speedy reenergizing of our people except through the agency of the churches. With this judgment the sociologist Ellwood is typical of the lay concurrence with this view.

When we come to the field of education we come to

(Continued on page 23)

TRANSITION

By **FRANCIS L. CASTLEMAN, Jr.**

Associate Professor of Structural Engineering, Vanderbilt University, Nashville, Tennessee, Registered Professional Engineer in Pennsylvania

SYNOPSIS

Engineers and engineering education have been subjected to a barrage of criticism, both from within and without, during the past few years. In a negative sense this is recognition of a sort and may indicate that the profession is about to become of age. This transition period and the proper attitude for the profession to adopt in attempting to chart its course can be understood intelligently only by a consideration of the social problem involved, past accomplishments, future trends, and the necessary present changes, particularly as applied to engineering education.

The Problem.

THE past twenty-five years have witnessed such accelerated changes in conditions throughout the world, and modes of living, as have transpired in few equal periods of time. These changes have made themselves felt in all walks of life, but more particularly in the professions. In the latter category engineering has had an especially heavy cross to carry.

Backed up by pure science engineers have done more than other groups in effecting these changes. Much of our modern social phenomena, if studied objectively, can be traced to their material efforts. These contributions of engineering, and their consequent disturbing effects, have acted as a boomerang on the engineer and today he often finds himself at the mercy of his own handiwork.

Engineers are the proletariat of science. Applied science has developed to such a degree that its parent, pure science, must turn to it for maintenance and aid. Great telescopes and atom smashers would hardly be possible without the aid of expert engineering talent and the works it has created.

Modern endeavor, in most fields, calls for group effort —today in engineering this is axiomatic. In earlier days the efforts of the individual or small group was the rule, but today the immensity of engineering projects makes this impossible. Where once a few could operate efficiently there is now required the combined resources and talents of many.

Mankind is always in a state of continuous transition. There are times, however, when this condition becomes so accelerated its surge is felt. The engineering fraternity, who deals with facts, recognizes this situation and realizes that in order to survive, with dignity, it must overhaul itself. Outside sources have also suggested that all is not well with us, or our methods, and that our approach should be subjected to considerable modification. While these criticisms of laymen may evoke smiles of superiority, it might be wise to afford them a hearing, considering the eminence of some of the critics. Regardless of personal opinions this external and internal criticism indicates a healthy attitude and should cause no alarm, provided proper attention is paid to making an intelligent inquiry into the underlying causes and the means of remedying them. To do this effectively requires a consideration of the past, present, and an estimate of future needs, along with a survey of the basic human material with which the engineering profession is furnished.

The quality of youth who aspire to the engineering profession is fundamentally the equal of those who decide to follow any other. Where the material to be developed seems crude it usually is due to immaturity and lack of pre-professional training. Those individuals who have the qualifications to carry through can bring to their chosen profession the equivalent attainments others bring to theirs. Where a combination of natural talent and aspiration exists, youth will always be attracted regardless of the obstacles that may confront it.

There are many divisions into which educable individuals may be grouped but the following three will serve as general classifications: the acquisitive or grasping, the self-expressive or creative, and lastly that portion of humanity who bend their efforts to some direct service for the betterment of mankind. These divisions are broad and each must be subdivided to definitely allocate any one individual. Each of these groups has its proper place in the general scheme of things and if one group is deficient its inadequacy will be reflected on society in general. Taken together all three keep the "wheels turning." Such a classification is of course based on the supposition that the fundamental aptitudes of men are "god-given" and that the best that can be done is to develop and nurture them. Engineers fall of cource into a subdivision of the self-expressive or creative group.

The requirements and rights to enter a profession should be determined by the profession itself. Those standards must be established and maintained whereby the incompetents and the dilettantes are eliminated. Ability and ambition must be forcefully present, coupled with character and dignity as necessary attributes for admission into any professional group.

Under any system of formal education a norm must be established to which each applicant must aspire and reach, or be eliminated. Those students who exceed this norm are that much better off, but at least a standard must be instituted and carefully maintained. If this is conscientiously done by the schools a large burden will be lifted from the professional societies and the work of examining boards can become of a routine nature, although necessary as a mandatory check on the nonconformists. Under such an arrangement little worry need be given concerning the ultimate success of the professional man. He will enter his profession well prepared, and if there is light, he will find his place in the sun, though it be modest. Any other restrictions or handicaps are doomed to failure, for they are essentially unjust and time will force them into the discard.

The Past.

By glancing at the past, its effect on the present can be seen, and a course roughly charted for the future.

With the advent of the railroad in this country unlimited opportunities were offered to those individuals who would now be known as engineers. However, these opportunities, in most cases, were of a "raw" nature and usually only exceeded by the "rawness" of the few ap-

plicants obtainable. Competition was not keen, in fact, was not present at all. In the eighties and nineties of the last century, when railroad construction had passed its peak, and more trained engineers had been developed than could be absorbed an actual depression was experienced by this group. While it did seem serious, and was to the individuals concerned, it would be mockery to compare it with modern conditions. Ordinarily, readjustments were made quickly and other lines of engineering endeavor absorbed the excess of engineering talent no longer required by the railroads. In later years there were periods when conditions were even more serious, but none of the problems of today's magnitude were present and readjustment usually came without too great distortion.

It is interesting and instructive to observe the educational machinery for engineering over this same period. With little or no variation the period of time was constant and has remained so until the present, with a few notable exceptions. It can definitely be stated that for the past sixty years, four years after high school, or its equivalent, has been the time devoted to formal engineering education. Whether this is correct or incorrect is beside the point; it does in itself stand as a remarkable fact, considering the tremendous advances made in engineering information and knowledge over this period.

In earlier days an engineering graduate was generally able to obtain employment in his chosen field. The truth of the matter was his services were at a premium. There were even periods when men were "bribed" away from the schools before their formal education had been completed. Those who had sound educational training, in many cases, found extraordinary opportunities upon which to lay the groundwork for a well stabilized engineering career. As time passed and the product proved its worth the value of a formal engineering education became properly evaluated and finally mandatory. True enough, there were many who came up from the ranks, but eventually this number grew smaller due to the competition of their better educated rivals. Today there is almost universal insistence on the technically trained engineer. Considering there is no dearth of such material, and not likely to be in the near future, this condition can be assumed as permanent.

That the system of engineering education in the past has been adequate would be hard to deny. A glance at the achievements of members of the profession during several previous generations clinches any argument that might be raised questioning this point. But it must be remembered this group did its work and passed the greater part of its professional life under social conditions which are far removed from those that exist today. Its opportunity lay in an expanding and growing country which was constructing a huge industrial system. Relatively, competition was not keen and an intelligent young man did not have the difficulty of securing employment in his chosen field that the better trained young engineers of today experience. The term better trained must be interpreted in a proportionate sense. Young men of today have a wealth of engineering knowledge and methods to draw on that was simply non-existent in earlier days.

Suggested Future Trends.

No statement can with certainty be made for the future. Nevertheless, this is no excuse why an estimate should not be made of its requirements and steps taken to insure some measure of success in meeting it intelligently.

It is only possible to plan and speculate on the future by a consideration of the past, taking cognizance of our present predicament and those necessary modifications we think will secure improvement hereafter. This being an era of great social change with all indications pointing towards a continuance of this condition for some time to come, the engineer must find his place (which should be an important one) in this society and seemingly no group can find its place in such a society except by collective effort.

Engineers can be divided into two groups. The first consists of that comparatively small group who will be concerned with the more theoretical phases of engineering throughout their professional careers. The second, and larger, consists of those who are concerned in a lesser degree with theoretical matters but to whom a general knowledge of applied science is indispensable. As far as numbers are concerned this latter group is far in excess of the former, but with regards to basic needs the larger group could not even function without the smaller. From this small cluster of theoretical engineers ideas are born and "whipped" into such shape that they can be used as the instruments for the solution of problems that may arise in the future. Anyone who has been closely connected with an engineering organization can easily recognize these two divisions.

It is interesting to consider what these two groups should be taught with respect to their formal education. Consider first those who will be associated with the more theoretical aspects of engineering. Certain minimum requirements can be laid down with which few will disagree. These are: (1) More time must be devoted to their higher education, say six years. (2) A goodly portion of their studies should be concerned with the social sciences and allied subjects. (3) Necessarily more pure science must be taught. (4) With this amount of time a reasonable amount of specialization could be allowed. With a limited number of students such a program could be advanced far under the leadership of a properly trained faculty.

The question now arises as to what should be taught to the larger group—those who will be concerned only with the more general features of engineering. Four years should be sufficient with curricula about like the present, but with slightly less specialization. This group as undergraduates would form the class from which the "theorists" could be selected. Entrance requirements for the four year group should be adequate (not easy), but before admission is granted to the six year course high ability and performance should be shown. Qualifications should be selective; much more than technical ability (which, however, should be given due weight) must be taken into consideration before the individual is admitted.

Human nature being what it is, will always look for some immediate reward for effort expended. What degree, upon graduation, should symbolize the relative efforts of these two groups? The most appropriate procedure, it seems, would be to confer on the four year group the degree of B.S. in Engineering and reserve for the six year group the professional degree of C.E.; M.E.; etc. With this arrangement the professional degree would have a definite meaning and assume a real value.

Graduate work would offer no difficulty. It will always be given in certain select institutions and limited to a qualified number of students. More opportunity should be offered for it than is now the case, and hours adjusted whereby a reasonable amount could be performed on a part-time basis by a select group who are actively engaged in engineering work. If done properly this would require a capable faculty, and a far seeing administration, who desire to render a service to those engineers actively engaged in theoretical fields.

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The Engineer's Professional Relations And Responsibility To Society

Talk by **FRED K. HOEHLER**

Executive Director, The American Public Welfare Association (delivered in the absence of Mr. Hoehler by P. D. Flanner, Field Representative, A. P. W. A.) before joint convention of Illinois Society of Engineers and National Society of Professional Engineers, Chicago, Illinois, January 31, 1941

SOME time ago my good friend Ed Larson, your own Executive Secretary asked me to speak to this meeting on a very comprehensive subject—"The Engineer's Professional Relations and Responsibility to Society." Let me say at once that if that title carries an inference to you that this is to deal with professional relations as those of a lawyer to the bar, or a doctor to his profession, that inference is misleading. It is misleading because the question of an engineer's relationship to his profession is one for self-analysis; it is not one for an outsider.

There have always been prophets, crying mostly in a wilderness, to emphasize the individual's relations to society—Jeremiah warned Judah, Tolstoi called on the rulers of Russia to mend their ways toward society, Veblen and others have tried to emphasize social responsibility in our American democracy.

Too frequently our neglect of social obligations is pure carelessness and based on our own preoccupation.

While scientists and engineers are primarily responsible for the great progress in machine development and in increased production they are so absorbed with their immediate tasks that they may become mere robots in the modern social order.

Society has a much larger place for the engineer in the task of relating scientific progress to the needs of man. In doing this he must bear in mind that man can not live by bread alone any more than he can live without bread. To be concerned only with physical and material development and not with its effect on people as a spiritual and moral force is to help construct a Frankenstein with all of its terrible consequences.

We have a right to expect engineers to think in terms of service and utility. You are trained as builders of scientific progress. Your physical progress needs the catalysis of interpretation. Interpretation requires not only broad knowledge and skill but also imagination and, very often, real moral courage. A cry is noiseless if there is no one to hear it. Your work is without meaning except as people are affected by it.

The engineer shares responsibility for interpretation with the public official and the welfare administrator. The association which I represent is made up of individuals who are in a sense social engineers with an obligation to help people fit into the new world which scientific engineering has created.

Early in the last decade the welfare authorities of the land called upon engineers to help meet a need by creating jobs in public works.

The millions of people who were economically dislocated by the impact of the depression needed jobs and it required the skill and imagination of the engineer to create the work opportunities.

During the periods of work relief, P.W.A. and W.P.A., many structural engineers proved themselves to be even greater social engineers. Projects were developed which had not only utility in themselves but also helped develop greater social responsibility within the community. Hundreds of playgrounds now exist for the benefit of whole communities where before there was only a teeming swamp or city dump with the attendant crime and sickness.

Communities have been protected against the perils of nature. Flood walls and dams have been built, draught areas have been reforested or watered by dam and ditch. Transportation has been made safer through broad highways and grade elimination.

All of this was part of an effort to help solve a great social problem of unemployment. While the problem is still waiting a solution it must be recorded that your profession had a large share in helping to reduce the suffering for those who had sought work in vain.

During these years the welfare official has come to have a very real respect for the place of the engineer in the broad program of public welfare. Many of your profession are now directing social services for government agencies and applying with validity the engineering principles and methods.

But these are experiences of the past and earlier decades. At the beginning of the fifth decade of this century the engineer and the rest of the professions stand at the threshold of a world revolution.

Behind him are years of work well done. In the span of 40 years the engineer with the cooperation of his fellow scientists and at the call for progress has performed miracles.

Physical production was increased 180%, primary power for each wage earner was increased 100%.

There were but the material results of modern engineering. The impact of these changes transformed industry and commerce into a great system of large scale production and world-wide inter-relationships. The most profound effects of these changes upon society are found in the realms which are the concern of the economist. Whatever economic theories we may espouse, we cannot overlook the tremendous maladjustments which have taken place in society that are directly or indirectly related to these changes in our economic base.

At this point, let me emphasize that the engineer is not to be blamed for the depression, nor is he to be held solely responsible for these maladjustments. I have already explained that without the engineer some of the necessary adjustments would certainly have been harder to bear. We must remember that the engineer has been in a sense the employe of industry and has worked at the bidding of our public administrators.

The engineer in this war torn world not only faces a world revolution, but must meet the greatest challenge to his profession—the challenge to make this world a better place in which to live. Not merely by doing the bidding of others—the engineer must participate in the planning and the administration of this nation so that we may preserve our democratic institutions and conserve the rights and value of the individual.

For some time to come the engineer will be engrossed in the age-old task of beating plow shares into swords—of speeding up milling machines and lathes to produce machine guns and projectiles. The engineer knows and we all know that this is not the highest nor the noblest use of his talents—and that the task of engineering for destruction is but a temporary and disastrous detour.

I should like to refer again to the part the engineer has played in the great social programs of the last five years. The figures themselves reveal the imagination, the skill, and the social foresight which went into these projects of engineering:

1. Over one-half million miles of highways, roads and streets.
2. Nearly 65,000 bridges and viaducts.
3. Over 25,000 new buildings and another 25,000 reconstructed buildings. And thousands of other projects relating to public utilities, health sanitation, conservation and airports, have been the product of the brains and skilled hands of the engineer.

In the past decade of depression the engineer has emerged from the narrow confines of industrial enterprise, and has found a more important and rightful place in public administration. The limited use of the skills, which the engineer has had to offer, has been the result of a combination of competition with private enterprise and the shortsightedness of our government. As early as 1921 the President of the United States saw the possibility of utilizing engineering knowledge and skills on a broader scale. An engineer conceived, organized and directed the President's Conference on Unemployment in 1931. We have just reviewed the important role many engineers have played in the years that followed.

Even in a world at war the engineer may continue his contribution to social betterment or at least toward reducing the suffering of people.

Any one who has been to England in recent months can testify to the imagination of engineers in the forms of protection which they have provided for people. In the speed with which transportation and other utilities are restored to people in a nation torn by bombs and common fire.

In our own land where we see a speeding up of our defenses the engineer and his associates are being put to new tests for their energy and resourcefulness. Living facilities and services must be provided for people in new communities; sanitation an important factor in our public health becomes largely an engineering function.

In much of this effort the engineer and the social planner must work together. If our efforts for defense are to help provide greater security within as well as protection from foreign foes more than construction and production are necessary.

As we build new communities we need to show a concern for the way in which people will live in them. Housing must be better housing and not new slums. Services and facilities which have been provided for a few because they are good for them must have wider distribution.

Together the engineer and social planner must provide protection against disasters whether they are natural or man-made.

To do these and other important things for the security and defense of our people now and when this emergency has passed, these two groups must join forces against the common enemies both within and without our gates.

Widespread opinion exists that great conflict exists between engineers and social economists, and that there will be a tremendous struggle between them for control of planning and for mastery of the problems of economic maladjustments. I maintain, from my experience with social economists, and from what I hear of engineers, that the struggle will be less bitter and less disastrous than the struggles which go on behind the scenes in both of these professions.

All of the professions whose skills are so sorely needed now in our world struggle for survival, and in the re-

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NEW JERSEY SOCIETY

OF

PROFESSIONAL ENGINEERS

TWENTY-FIRST

Annual Convention

Hotel Traymore

ATLANTIC CITY, - NEW JERSEY

APRIL 25-26, 1941

Convention Theme

"THE ENGINEER IN THE NATIONAL DEFENSE PROGRAM"

NATIONAL SOCIETY NEWS

THE WHITE HOUSE
WASHINGTON

John C. Riedel, Esq.,
President, National Society
of Professional Engineers,
1347 Municipal Building,
New York, N. Y. December 31, 1940

My dear Mr. Riedel:

The President has asked me to thank you for your letter of December twentieth, embodying a resolution adopted by the Board of Directors of the National Society of Professional Engineers, regarding Lieutenant Colonel Brehon Somervell. He much appreciates your thoughtfulness in letting him have this expression of approval.

Very sincerely yours,
(S) STEPHEN EARLY
Secretary to the President

Mr. John C. Riedel, January 9, 1941.
President, National Society
of Professional Engineers,
1347 Municipal Building,
New York, N. Y.

My dear Mr. Riedel:

Your letter of December 20th addressed to The President of the United States, concerning a resolution adopted by the National Society of Professional Engineers in the interest of Lieutenant Colonel Brehon B. Somervell, Quartermaster Corps, has been referred to this office for reply.

It is very gratifying to the War Department to learn that the work of Colonel Somervell as Administrator of the Works Projects Administration in the City of New York was such as to merit commendation by the National Society of Professional Engineers and an expression of confidence in his ability to perform his present duties. Your letter has been placed with Colonel Somervell's official record in this office.

Very truly yours,
E. S. ADAMS
Major General,
The Adjutant General.
January 18, 1941.

Mr. John C. Riedel, President,
National Society of Professional Engineers,
1347 Municipal Building,
New York, N. Y.

Dear Sir:

Your letter of December 20, 1940, to the President expressing on behalf of your Board of Directors the pleasure and appreciation felt by them in the recent appointment of Colonel H. M. Waite as a Consultant in the Bureau of the Budget, has been referred to this office for attention and acknowledgment.

The Director has asked me to assure you that he is very appreciative of this attitude on the part of the engineering profession.

Very truly yours,
(Signed) F. J. LAWTON
Administrative Assistant.
Executive Office of the President,
Bureau of the Budget,
Washington, D. C.

To the Presidents of the State Societies:

We enclose herewith a map of the proposed Alaska International Highway prepared under the auspices of the Washington Society of Professional Engineers which merits much study and thought. It is a well prepared piece of information on a very vital subject. It serves to suggest that there are many ways in which the National Society of Professional Engineers and its Member Societies can be of help to the community. It suggests that there are many dignified means by which we can obtain much needed publicity and recognition.

This also serves to call our attention to the fact that we must ever look to the future in order that our talents may not be wasted. It is necessary that we introduce the promotion of worth while and much needed projects which will keep ourselves occupied in gainful work that is in the interest of the public; work which will also produce an outlet for the skills of the artisans who are being trained in such large numbers as a result of our present emergency. These artisans will become, definitely, the engineers' responsibility.

Sincerely yours,
EDWARD LARSON,
Executive Secretary.

Recommendations of Educational Committee Hale Sutherland, Chairman

1. That each state society be urged to consider the subject of professional education in a democracy at meetings of their several sections, calling upon qualified speakers to represent technical schools, higher education in its broader aspects and our own Society.
2. That this committee endeavor to formulate a concrete proposal for presentation at the June meeting of the Society for the Promotion of Engineering Education, making formal request for a place on the program.

INDIANA

AN OPEN LETTER TO THE MEMBERS OF THE 82D INDIANA GENERAL ASSEMBLY

Dear Indiana Legislators:

The Indiana Society of Professional Engineers is sponsoring a program which they believe is non-political and the equal in importance of any program which you will be asked to consider. This program is four-fold. First, you will be asked to consider a merit system for State engineers and engineering employees.

The merit system has been discussed for years and noth-

We urge upon our State Societies a study of the Year Book of the New York State Society of Professional Engineers with a view to promoting a similar enterprise. Address

Grand Central Terminal,
New York City.

ing has ever been done about it, for reasons which were considered good at the time, but now, as never before, there exists an emergency which is vitally important to every citizen of Indiana. Who has any better right than the citizenry of Indiana to demand the best engineers and the best engineering talent in the employ of the State departments, such as the State Highway Commission, the State Board of Health and the State Conservation Department? The State of Indiana has the right to demand this, but at the present time this demand can not be fulfilled because engineers of the caliber required are not available to fill all of the positions which are open at the pay offered. At the present time the State Highway Commission is very much undermanned in its engineering department and how can an organization with a $26,000,000 program function without its proper quota of engineers?

There are two main reasons why this deplorable condition exists. First, the defense industries and projects with which Indiana has been so bountifully blessed have taken and are taking engineers from our State departments, because these industries, although by no means permanent, are paying higher salaries; and secondly, because employment in the State departments is not secured even at a lower salary. If these positions in the State departments were made secure by such a merit system as will be proposed for consideration by you gentlemen, it is true that most engineers would be satisfied to stay in the State departments at lower salaries than they could get elsewhere.

No better explanation of the engineer's fear of insecurity can be found than what Professor Ben H. Petty, of Purdue University, writes in regard to a merit system. Professor Petty writes:

"I sincerely hope that your legislative committee (the legislative committee of the Indiana Society of Professional Engineers) will be successful in getting a workable and satisfactory civil service or merit system established in this State, at least covering the State Highway Department.

"I have been handling the employment of our civil engineering seniors and alumni for some fifteen years, and am considerably disturbed over the increasing reluctance of our best men to accept employment with our State Highway Department or with other governmental units in which political patronage is involved. It seems to me that our best men should go into public service where there is a real opportunity of rendering expert and helpful assistance to the citizens of the State. But I cannot blame the boys for their attitude. They are ambitious to carve a successful career for themselves, they expect to be married soon, to rear a family, and are vitally concerned in a career that will offer some security and a reasonable income not dependent upon changes of political administration. Many of these boys, I am sure, would like nothing better than a career in the State Highway Department if they were assured of a tenure of office providing their work was satisfactory and salary rates were reasonable. You would be surprised over the number of letters I receive from our graduates at times when they are interested in new positions in which they state definitely that they are not interested in employment with the State Highway Department or any other governmental agency in which political patronage is involved"

At the present time in the State Highway Commission there are employed 252 registered engineers and 124 nonregistered engineering employees, making a total of only 376 employees who will be affected by the proposed merit system. It should be stated that most of the nonregistered engineers are young men not yet qualified by experience for registration. It may be thought that these 376 employees have been hired since 1933, but such is emphatically not the case. Twelve of these 376 have had 20 to 22 years' service, 38 have been with the Commission 15 to 20 years, 77 have been employed for 10 to 15 years, and 30 have been employed for 8 to 10 years which shows that 157 engineering employees in the State Highway Commission were there prior to 1933. How long can we hope to hold these men in State Service, in the face of more attractive opportunities in the war industries, unless we increase their income and their security?

At the present time the State Highway Commission has approximately 3800 employees of which the above mentioned 376 engineers and engineering employees are but a 9-9/10 per cent, and in the summertime the commission has approximately 6000 employees, of which the 376 engineers and engineering employees are a scant 6.3 per cent.

Similar figures could be given for the State Board of Health and the State Conservation Department.

It is very costly, and the taxpayers are always interested in costs of State government, to keep in operation an organization of a technical nature such as that in the highway department, if that organization has to take men, train them, and then have these men, after they are trained, move on to other employment in industry, and then take more men for more training in State service. We have now in Indiana a highway department which is second to none, and a highway system which is second to none, and the only way to keep it such is to have an efficient, permanent engineering department filled with the best engineers coming out of our engineering schools, and Indiana has three of the best, Purdue, Rose Polytechnic and Notre Dame.

A merit system for engineers and engineering employees in all State departments is the only answer and cure for the conditions which confront these State departments.

The second part of our program deals with the county surveyor and is somewhat similar to the first in that the public, the residents of each of the ninety-two counties of Indiana, have the right to demand the best available engineering talent in their county surveyors. In many counties it is a known fact that this is not true, since the salary of the county surveyor is now determined by the population of the county, as set by law, and is very low in certain counties. Consequently, all the engineers available, including many of the best, are not willing to run for this office at its present rate of pay.

This condition was somewhat corrected a few years ago by an amendment to the County Engineer Act stating that if the county surveyor is a registered engineer that his salary shall be one and one-half times that of a surveyor who is not a registered engineer. Now this Society believes and knows that a great many more counties will be benefited with better engineering service through their county surveyors if this amendment were changed so that a registered engineer's salary as county surveyor were twice that of the nonregistered man. This would attract more registered engineers to run for this office.

The third point of our program concerns city engineers. It is a well known fact that the Purdue Road School, which is held annually at Purdue University, is

of great benefit to highway engineers, county surveyors and county road supervisors who are required to attend with their expenses paid. At the Purdue Road School these different groups hold meetings to discuss their problems and to learn of improved methods of road and street building, etc.

If the past General Assemblies have seen fit to establish the Purdue Road School and require various bodies to attend, then this General Assembly, may well require the city engineers also to attend, with their expenses paid by the cities employing them.

The fourth and final point of our program is the endorsement of an amendment to the present Engineers' Registration Law, which is one of the best of forty-two similar State laws, to require that wherever the word "engineer" appears in the laws of Indiana it shall be interpreted to mean a registered professional engineer as defined in the Indiana Engineers' Registration Law.

This program may seem ambitious with only the welfare of the engineers in mind, but with a little careful study, and delving a little farther into the facts concerned, it is ambitious for the taxpayers as well.

Respectfully submitted,

INDIANA SOCIETY OF PROFESSIONAL ENGINEERS.

St. Joseph Valley Chapter

At a recent meeting of the St. Joseph Valley Chapter, the following were elected officers: Clyde Williams, President; Milton Kenney, Vice-President; Thomas DuMont, Secy.-Treas.; John E. Hupp, Jr., State Director. The Chapter Directors are: Earl L. Alexander, Wm. S. Moore, Walter Wiekamp, R. B. Berns.

RESOLUTION ADOPTED

The Society at its last meeting adopted the following resolution:

WHEREAS, A Civilian Defense Bill will be presented to the Indiana State Legislature assembled in 1941, and,

WHEREAS, the proposed Bill provides for the organization of an Advisory Defense Council of ten members, to be appointed by the Governor, and,

WHEREAS, the members of the Advisory Defense Council will be appointed to represent Business, Labor, Agriculture, Veterans, Consumers, and other groups essential to the Defense program, and

WHEREAS, the Registered Professional Engineers of the State of Indiana seek to promote public welfare by safeguarding life, health and property, and

WHEREAS, the Registered Professional Engineers of the State of Indiana will be called upon to do much of the work in the Defense Program, and

WHEREAS, The Indiana Society of Professional Engineers consists only of Professional Engineers, licensed to practice under the Indiana Engineers' Registration Act and is the only society in Indiana representing the Registered Professional Engineers, therefore,

BE IT RESOLVED by the Indiana Society of Professional Engineers, in regular monthly meeting assembled, that it is desired and deemed necessary that one member of the Advisory Defense Council be a Registered Professional Engineer and that the request for such an appointment be made to the Governor by the President of the Society and the Legislative Committee.

BE IT FURTHER RESOLVED, that it is desired that said Engineer on the Advisory Defense Council be a member of the Indiana Society of Professional Engineers.

NEW MEMBERS

The following applications of engineers for membership in the Society, were presented at the December meeting:

Don R. King, Rensselaer
H. K. Spears, Lagrange
Bright B. Bortner, Albion
Fred R. McComb, Indianapolis
Herschel H. Weaver, South Bend
Ray B. Plummer, South Bend

The following applications were accepted of former members who wished to rejoin.

Paul B. Manson, LaPorte
F. E. Bernoske, LaPorte
Arthur Babcock, LaPorte
David G. Goodwin, LaPorte
Milton T. Kenney, LaPorte
Lawrence E. "Abe" Martin, Lafayette.

MISSOURI

President E. B. Black has appointed the personnel of the eight standing committees. The formal notification was by mail and now that the acceptances have been received the committee lists are being published in their entirety:

Ethics and Practice: Dr. W. R. Chedsey, Rolla, chairman; A. E. Bettis, Kansas City; H. P. Phelan, Moberly; Col. F. W. Green, St. Louis; T. J. Strickler, Kansas City.

Legislative and Enforcement: L. A. Pettus, St. Louis, chairman; A. W. Archer, Kansas City; E. B. Flinn, Moberly; Jerome A. Moss, Kansas City; C. P. Owens, Springfield; Bruce Williams, Joplin.

Public Relations: Bruce Williams, Joplin, Chairman; H. J. Bruegging, Jefferson City; C. W. S. Sammelman, St. Louis; J. K. Walsh, Jefferson City.

Membership: C. G. Roush, Kansas City, Chairman; J. B. Butler, Rolla; Wm. Anderson, Jefferson City; Dean Wilson, Hannibal; Roy Averill, Kansas City; W. H. McMurray, St. Joseph; W. E. Barnes, Liberty; J. M. McCann, Springfield; E. J. A. Gain, St. Louis; L. B. Mitchell, Joplin.

Chapter Activities: Howard C. Williams, Kansas City, Chairman; D. J. Ariagno, St. Joseph; Leo F. Beckett, Sikeston; H. C. Beckman, Rolla; H. D. Thomasson. Springfield, J. J. McAfee, Joplin; R. J. Kunder, Macon; N. R. Beagle, Jefferson City.

Rules: Alex Sacks, Kansas City, Chairman; R. W. Ackerman, St. Joseph; H. E. Frech, St. Louis; V. W. Whitfield, Jefferson City; Carl W. Irwin, Springfield; F. R. Loveridge, Lemay; W. M. Spann, Kansas City; O. A. Zimmerman, Kansas City.

Resolutions: E. C. L. Wagner, Jefferson City, Chairman; Fred D. Harris, Sikeston; M. H. Small, Kansas City; P. H. Sommers, Jefferson City; C. C. Christenson, Kansas City.

Aims and Activities: E. W. Carlton, Rolla, Chairman; Frank Beard, Kahoka; E. E. Howard, Kansas City; J. C. Pritchard, St. Louis; E. R. Schultz, Cape Girardeau; T. J. Skinker, St. Louis; Gen. E. M. Stayton, Independence.

A procedure for committees as set forth in Executive Board action appeared in the preceeding issue.

APPEAL TO MISSOURI ENGINEERS

Engineers—Are we going to work as a unit in our own behalf?

If the answer is YES then we can get somewhere but it will take your financial as well as your moral support.

Donations are coming in slow and time is valuable so

why not set right down and mail a check for five dollars or more to any of the following committee.

You should remember that professional recognition will mean much to you as an Engineer.

We urge you to put forth every effort possible so that another appeal will not be necessary in the future.

Special Finance Committee

Oren J. Lamb, Chairman, Macon, Mo.
R. P. Cummins, Jefferson City, Mo.
Frank Beard, Kahoka, Mo.
A. H. Baum, Jr., St. Louis, Mo.
Wm. M. Spann, Kansas City, Mo.
Clayton O. Judson, St. Joseph, Mo.
Bruce Williams, Joplin, Mo.
Earl R. Schultz, Cape Girardeau, Mo.
E. W. Carlton, Rolla, Mo.
Swan McDonald, Moberly, Mo.
Claude P. Owens, Springfield, Mo.
Mail your donations at once.

NEW JERSEY

THE NEW JERSEY SOCIETY OF PROFESSIONAL ENGINEERS

Officers—1941

S. Herbert Taylor, Camden .....President
Russell S. Wise, Passaic .....Vice-President
C. George Krueger, Jersey City .....Vice-President
Frederick D. Braun, Ventnor City ..Secretary-Treasurer
Philip Kissam, Princeton .....Director-at-Large
C. Benson Wigton, Plainfield .....Director-at-Large

Past Presidents

Spencer C. Hamilton, Jr. Glen Ridge
Ernest F. Weeks, Paterson

National Society Director

George F. Randolph, Red Bank

Frederick D. Braun, Ventnor City, Editor
22A N. Nashville Avenue

Component Chapters

ESSEX COUNTY ENGINEERING SOCIETY
Hubert P. Matte, Secretary, 96 Boyden Ave., Maplewood

HEADQUARTERS CHAPTER (for Members-at-Large)
Frederick D. Braun, Secretary

PROFESSIONAL ENGINEERS' SOCIETY OF HUDSON COUNTY
Raymond F. Leuthy, Secretary, 12½ Nesbitt St., Jersey City

MONMOUTH-OCEAN PROFESSIONAL ENGINEERS' SOCIETY
Leo K. McKee, Secretary, 16 McLaren St., Red Bank

MORRIS COUNTY CHAPTER
Robert F. Edwards, Secretary, 82 Watchung Ave., Chatham

PASSAIC COUNTY ENGINEERS' SOCIETY
L. Martin Harris, Secretary, 101 Oliver St., Paterson

SOUTH JERSEY CHAPTER
Frederick D. Braun, Secretary

UNION COUNTY CHAPTER
S. McKim Rusk, Secretary, 20 Lavina Court, Summit

WEST JERSEY CHAPTER
Paul P. Rice, Secretary, Hillcrest Apts., Phillipsburg

1941 CONVENTION NOTES

Your Committee has planned a bang-up program and one that will appeal to the Ladies.

Please cooperate by sending in your Advertising and Exhibit Contracts EARLY.

MONMOUTH-OCEAN CHAPTER

The Monmouth-Ocean Professional Engineers' Society held their monthly meeting Wednesday evening February 5th at the Colt's Neck Inn, Colt's Neck, New Jersey, Bruce Larrabee of Lakewood presiding.

Mr. L. Gray Marshall, Power Sales Engineer of the Jersey Central Power & Light Company presented colored motion pictures showing the activities of industrial businesses located in and around the shore area.

Mr. Leo McKee and Mr. George Randolph of Red Bank reported on the national convention in Chicago which they attended.

Officers for the ensuing year are Bruce Larrabee of Lakewood, President; Otis Seaman of Long Branch, Vice-President; and Leo McKee of Red Bank, Secretary-Treasurer.

Through the efforts of the employment committee all members of the chapter have positions.

The next meeting will be held March 5th the location to be announced shortly.

NEW YORK

MID-WINTER MEETING, FRIDAY, FEBRUARY 28 AND SATURDAY, MARCH 1
HENDRIK HUDSON HOTEL, TROY

1941 Professional Engineers' Manual

Distribution of the 1941 *Professional Engineers' Manual,* the first Year Book to be published by the New York State Society of Professional Engineers, Inc., has begun, it is announced by Engr. Frederick H. Zurmuhlen, President of the organization. Its 500 pages of vital information include the listings of more than 2300 engineer-members representing 24 chapters in the State.

The roster is a list of those who give of their interest, their time, and their means for the support of the work of a group of engineers who have meant much to the progress of America. It is a list of those who, both now and in the days just ahead, will have a great deal to do not with talking about defense, but with the actual processes of production through which our nation's physical defense program will be greatly strengthened.

President Zurmuhlen, the Editor-in-Chief of this publication, and his editorial staff, take a justifiable pride in the new Year Book, and are greatly pleased with its acceptance throughout the technical community and hope it will continue to prove useful as it is issued each year with an entire change of pertinent material.

The Society's Board of Editors consist of the following prominent engineers: John Charles Riedel of Brooklyn and Chief Engineer of the Board of Estimate; Arthur V. Sheridan of The Bronx and City Planning Commissioner; Dr. David B. Steinman, eminent Bridge Designer; Andrew K. Johnson, Chief Engineer of Queens Highways; William J. Picard, Chairman of the State Board of Standards and Appeals; Dr. Erich Hausmann, Dean of Graduate Study, Brooklyn Polytechnic Institute; Alexander Haring, former Professor at New York University; Hubert E. Snyder of Elmira; Alfred E. Roche of Troy; Ross Hare and Edward T. Hager of Niagara; Oliver F. Allen, George J. Nicastro, Fred A. L. Schmidt and John M. Weiss of Manhattan; Patrick M. Corry, Joseph B. Diamond, Ernest F. Fox and James M. Welsch of

The Bronx; Charles W. Franklin and Frederick Ward of Brooklyn.

The Board of Editors have endeavored to include among the materials of the initial issue of this Manual data and information of interest to each of the major branches of professional engineering. The Year Book contains full information concerning our Society and its membership in addition to legal and technical information constantly used by engineers in their professional practice. Several items are published for the first time. Among these the bibliography of sources of engineering information should prove of particular interest to the membership.

Brooklyn Engineers' Club

Officers

HERMAN F. FORD .....President
ALBERT T. EHRINGER .....Vice-President
GEORGE A. DORFMAN .....Secretary
WILLIAM H. WHARTON .....Treasurer

Directors: Charles W. Burke, Arthur W. Von der Linn, Edwin H. Thatcher, Lauritz Lauritzen, Frank P. Padronaggio, John Charles Riedel, Edward A. Thompson.

Auditing Committee: Walter M. Purdy, Frank H. Sewall, John E. Setchell.

Standing Committees

Meetings and Papers: David Standley, Chairman; Col. Robert Starr Allyn, Brutus Gundlach, Lawrence J. McSherry, Leon Z. Lafferty, Albert T. Ehringer, Dr. David B. Steinman.

Advertising: Louis G. Nieman, Chairman, Charles W. Burke, Albert T. Ehringer, George A. Hartung, William E. Paulson, Charles N. Pinco, Joseph F. Quinn, John Charles Riedel, Dr. D. B. Steinman, Edwin H. Thatcher.

Entertainment Committee: Arthur W. Von Der Linn, Chairman; George V. DeFronzo, Harry P. Moran, George S. Teter, Amos F. Thiergardt, Edward A. Thompson, James Allen Tuck.

Excursion: Arthur D. Nosworthy, Chairman; Fred D. Crawford, Fred W. Ebel, George E. Langhauser, Anthony F. Nappi, George S. Prezioso, Frank D. Ross.

House: Louis G. Mertz, Jr., Chairman; Robert J. Beutel, Karl H. Gohlke, Emil N. Johnson, Eugene Guarini.

Library: Frank P. Padronaggio, Chairman; Fred Bertino, Morton Merron, Joseph F. Mistretta, Thomas V. Musacchio, Philip M. Paterno, David M. Reiter.

Membership: Lauritz Lauritzen, Chairman; Harry J. Dickson, John H. Denny, Horatio W. Doebler, Arthur W. von der Linn, Sanford Setchell, Frank H. Sewall.

Brooklyn Chapter

The Brooklyn Engineers' Club is fortunate indeed in having as its Chairman of the Meetings and Papers Committee, *Engineer David Standley,* who is not like the person who could not see the forest for the trees, but who has taken advantage of securing from the club's membership roster speakers of outstanding quality and prominence in their respective professional fields.

Engineer Singstad is internationally known as an authority on tunnel design and construction, and his tunnel engineering engagements have extended to the eastern and western hemispheres. He has been identified with the design and construction of many notable tunnels, including the Hudson-Manhattan tunnels, the rapid transit system in Philadelphia, the Holland Tunnel, the vehicular tunnels under the Oakland Estuary between Oakland and Alameda, California, the tunnel approaches to the George Washington Bridge, the Detroit-Windsor Tunnel under the Detroit River, the Midtown Hudson or Lincoln Tunnel, the vehicular and pedestrian tunnels under Scheldt (Antwerp, Belgium), the Queens Midtown Tunnel, the Brooklyn-Battery Tunnel, and others.

Frequently honored by his engineering associates, Engineer Singstad has received many medals and awards, including Knight 1st Class, Order of St. Olav, Norway; Decorated Officer Order of the Crown, Belgium; Doctor of Engineering, New York University and the Stevens Institute of Technology, and as an avocation lectures on Foundation Engineering at Harvard University, and is an author om many technical papers such as *Engineering Problems Related to the Health of Workers in Compressed Air; Ventilation of Vehicular Tunnels; The Relation of Tunnels and Bridges to Traffic Congestion; Recent Subaqueous Tunnel Construction in the United States,* and others.

Engineer Singstad is a convincing, forceful speaker and will illustrate his talk with lantern slides, which will include some comparable construction features of the Queens Midtown Tunnel.

Among Our Members

Louis R. La Porte has been ordered to active duty as Lieutenant, Civil Engineer Corps, U. S. Naval Reserve, Fifth Naval District, Norfolk, Virginia.

Joseph F. J. Jakubowsky has left these United States for a period of approximately three years to accept an engineering position in connection with the construction of United States defenses in the British West Indies.

Past president *Edwin H. Thatcher,* former Commissioner of Buildings, a builder of repute and active in civic affairs, has accepted an active part in the guidance of the Certified Building Registry of the United States.

Secretary of War Stimson has appointed a committee of seven prominent engineers to study the problem of protecting municipal sewerage systems, water mains, subways, and buildings and of safeguarding civilian population against aerial invasion. The committee will cooperate with the War Department in formulating plans. Engineer *Walter D. Binger,* Commissioner of Borough Works, and Secretary *George T. Seabury* of the American Society of Civil Engineers, will be chairmen of the Committee.

Bronx County Chapter

The Mid-Winter meeting of the State Society will be held at Troy, New York, February 28 and March 1, 1941.

Advice has just been received from State President Zurmuhlen that the following comprise the Committee on Resolutions for this meeting:

Engineer Clarence W. Post, Chairman, 38 Euclid Avenue, Albany, New York.
Engineer Harold B. Howe, 2423 Lavin Court, Troy, New York
Engineer Egbert C. Lowe, 243 State Street, Schenectady, New York

They will receive from officers, members and chapters any and all resolutions for consideration at the Mid-Winter Meeting. Copies of proposed resolutions should be forwarded to each member of the committee as soon as possible and before February 28, 1941.

In preparation for National Defense, several courses of instruction are being given for Engineers at New York University and Manhattan College.

A prospectus has been received from our Zone Director Engineer G. J. Nicastro in the matter of courses helpful to those who are desirous of applying for Professional Engineering licenses. Copies are distributed as far as available. It may be noted however, that the Bronx County Chapter is offering courses in Public Speaking

through the generosity of Past President Alexander Haring and at no cost to its members.

Your President or Secretary would be pleased to be advised of any member who has been called to serve in the armed forces of the Government, or should your call come later please advise at that time.

Your Chapter Nominating Committee, composed of Engineers A. Haring, Chairman, Brother Aubert, Ernest F. Fox and Henry G. Vermont, has therefore duly submitted the following candidates for the year March, 1941 to March, 1942:

For President—Paul T. Treutler
For Vice-President—Charles F. Giraud
For Secretary—Joseph L. Brennan
For Treasurer—Solon E. Friedeberg
For Director to the Executive Board to serve until March, 1944—Julius Harwood, John H. Knight, Raymond J. Van Wagner, John A. Young

Elections will be held at the Annual Meeting of the Chapter on March 6, 1941.

The Following Directors remain in office:

Until 1942

Engr. Joseph B. Diamond, Engr. Charles F. Giraud, Engr. Samuel J. Kessler, Engr. Arthur V. Sheridan

Until 1943

Engr. John J. Kelly, Engr. Brother A. Leo, Engr. Richard C. Mugler, Engr. Henry C. Vermont

Kings County Chapter

Membership Status

On January 1, 1940, the Chapter had 309 members; on January 1, 1941, 346 members; a net gain of 37 members during the year. Although 56 new members were enrolled, there was a loss of 19, 4 by death, 6 resigned and 9 dropped for non-payment of dues.

The dues status of the 346 members as of January 1, 1941, is as follows:

Members Paid up for 1941 (NEW)	22
Members Paid up for 1940	245
Members Owing for 1940	49
Members Owing for 1939, 1940	18
Members Owing for 1938 1939, 1940	12
Active Members	346

Among Our Members

Just received word that another of our members, *Philip Goldsmith,* was admitted to the Bar—the legal Bar, if you please. Phil got his LLB from St. Johns.

Yours truly received an interesting letter from past president *Joe Vertefeuille* now at West Palm Beach, Florida, which I quote in part: "I am enclosing my membership dues for 1941 . . . I enjoy reading the Bulletins . . . I haven't done much engineering, except to watch well driving, road and building construction . . . I have made several trips to the Everglades, seen the harvesting of sugar cane and manufacturing of raw sugar, inspected the irrigation and drainage works by means of which thousands and thousands of acres of rich soil have been reclaimed and being used for sugar cane plantations and growing of all sorts of vegetables.

Albany County Chapter

At the Chapter meeting January 21, our guest speaker was Engineer Hubert E. Snyder, Vice-President of the New York State Society of Professional Engineers. The subject of his address "What the Society of Professional Engineers has accomplished for the Engineer and its Plans for the Future."

OHIO

State Society News

Since the last meeting we have ten new members, as follows:

William H. Brabson, Sr., Dayton—Civil
Harry R. Burns, Cincinnati—Civil, Mechanical, Electrical
George W. Crane, Dayton—Mechanical
Stephen A. Derry, Cleveland—Civil
Joyce C. Everett, Lima—Mechanical
Norbert R. Patton, Cincinnati—Electrical
Carl Schmahl, Mansfield—Structural
Joseph A. Thomas, Columbus—Civil
Russell L. Tussing, Dayton—Civil
Louis A. Weinland, Dayton—Chemical

Prexy Harry Nold reported that some of your officers have been getting around. Bill Kammerer has visited the Toledo Society and has talked new constitution, etc., with his own Cleveland Society which, by an 82 per cent favorable vote, adopted the new constitution modeled on the OSPE new constitution. Walter Graf also has visited Cleveland, when the principal speaker was Ohio's Ed Larson, Secretary of NSPE. Nold and Public Relation Chairman Weed attended the Canton Regional meeting November 14 and Nold reported that Charles Fritche of New Philly, Canton's representative on the Board, was wearing a double-breasted suit, just like Nold's as mentioned in the October *News Bulletin.*

Salaries

Chairman Cantwell reports returns from 89 cities and 47 counties detailing work and qualifications of engineering employees. Tentative classifications and salary limits have been set up. The "ceilings" in public employment, salaries fixed by law, are in the way. Our Legislative Committee is watching that. By the way, each Chapter should recommend a Legislative Committee member to Chairman Bob Waid. Do it now. Our legislative proposal, endorsed by your Board of Direction, is the Commission Plan for organization of the Ohio Department of Highways. The Legislative Committee has been instructed to "dust off" the bill which was presented once before, and have it ready when the Legislature convenes.

Lobby

Legislative Chairman Bob Waid and not more than three other OSPE members are to be regularly registered as lobbyists before the new General Assembly assembles.

Incorporation

Jack Kennedy, chairman of the committee on incorporation, reported much progress with particular help from a couple of our members who are also lawyers. Incorporation, which would remove the threat of personal liability from our officers in case we sue or are sued, would cost only $26. But we must have trustees to be responsible for the Society's property, etc. The committee will have a report early in January on the advantages and disadvantages of incorporation, working on the plan of making trustees out of the voting members of the Board of Direction (the OSPE officers and one representative from each chapter) as the Board is constituted on January 15, 1941. Another reason for completing chapter affiliation as soon as possible is that only the chapters as defined by the new constitution will have voting representatives on the Board after January 1.

Hocking Valley Chapter

During the past year we had nine meetings, the attendance varying from a minimum of 15 and running up as high as 50 including the guests. We started the year with the February meeting which was held in Athens, for the purpose of electing officers and starting off the official year. In March we met in Pomeroy and were guests of the Excelsior Salt Co. at which time we went through their plant. At our Logan meeting in April we had movies on the measurement of high velocities in open flumes and a film showing the construction of the famous $300,000 a mile road in California.

In May we met in Nelsonville where we inspected the plants of the Brooks Shoe Co. and the Nelsonville Brick Co. Our June meeting was perhaps the high spot of the year. We were guests of the Logan Clay Products Co. for a trip through their plant, an afternoon of golf, a buffet dinner and an evening of entertainment. In July we met in Crooksville and inspected the Hull Pottery and the Crooksville China Co. Our August meeting was purely social and was held at the American Legion Camp in Vinton County. The November meeting, which was held in Pomeroy, was given over entirely to the adoption of a new Constitution and By-Laws, which were made effective November 18, 1940 and approved by the Ohio Society immediately thereafter. In accordance with the constitution the time of the Annual meeting was changed to December, so we met in Athens at that time and elected the following officers:

President, O. B. Stout; Vice-President, John Dowler; Secretary-Treasurer, George W. Clark

Representative to the Board of Direction of the Ohio Society, George W. Clark

Cleveland

Civil Service Committee

The Civil Service Committee has received from the Ohio Civil Service Council a draft of certain proposed revisions in the Civil Service Laws of Ohio. The committee has made a study of this draft, and are now engaged in preparing a report recommending some changes which they think desirable.

After approval by our Board of Direction, it is intended to forward this report to the Ohio Society looking toward action by their Legislative Committee in conjunction with the Ohio Civil Service Council so that a better Civil Service Law may be enacted.

New Member

We welcome into the Society, and introduce to the membership, Stephen A. Derry, Civil Engineer, 10402 Edgewater Drive, Cleveland.

Registration Board

Governor John W. Bricker has announced the appointment of J. E. Tobey, Mechanical Engineer, Cincinnati to membership on the Ohio Board of Registration for Professional Engineers and Surveyors, succeeding Ivan R. Ault.

Personals

Albert S. Porter, Chief Deputy County Engineer, has received a request from the Navy Department as to how soon he will be able to report for active duty. Engineer Porter is a Lieutenant in the Naval Reserves.

Editorial *(The Cleveland Engineer)*

With the new year our Society is entering upon a new phase in its history. Though our local Society may lose some members temporarily, we can confidently look forward to a stronger State and National Society, and we shall then more than regain any loss we may suffer at this time.

It is inevitable that with the increase in dues many members are going to wonder what the Society can do for them. Instead of this question, we feel that all engineers should ask themselves what they can do for the profession.

Secretary Ed Larson of the National Society expressed himself rather bluntly but forcibly on this subject at our Constitution Meeting on October 24. He said at that time: "The National Society has been told time and again by individuals, 'When you do something we will join.' I would like to go on record as saying that the National Society of Professional Engineers is not an organization accepting members as a reward for work done. It is a reservoir in which individuals pour their puny efforts to get sufficient strength to speak with authority."

Anyone who thinks as does the imaginary individual quoted above must feel that something needs to be done. In that case he should become a member of our Society and join his efforts toward improving the status of the profession with those of other engineers. Individually we can do little; collectively we can do much.

Benefits are seldom gained without effort. Sometimes the groundwork required is so extensive that results are not apparent for a considerable time. Though the rewards are long delayed, and more often than not intangible, they will none-the-less be real. We should not question whether or not we will receive any personal benefit from our efforts, but should be well satisfied if any improvement is effected in the profession as a whole. A benefit to any part of the profession will benefit every engineer, just as the ripples from a stone dropped in the water reach every part of the pool, even though the force diminishes with distance.

One of the greatest needs of the engineer is the development of a professional consciousness. Our battle would be half won if we could instill in every engineer a sense of professional pride, and a feeling that whatever he does constitutes something towards the increase or decrease of the prestige enjoyed by the profession in the eyes of the public. If we are to expect better things for our profession we must make ourselves worthy of them.

It is also well to keep in mind what is the real reason for the defining of the engineering profession by law. In the words of the Registration Act, the regulation of the practices of engineering and surveying is necessary "in order to safeguard life, health, and property." The licensing of engineers redounds to the benefit of each registered engineer, whether in private practice or a salaried employee, by excluding from practice the unqualified psuedo-engineer. But the prime reason for the Registration Act is to protect the general public from the acts of persons who claim to be engineers, though they are in fact not qualified. As long as we view everything we do in the light of protection to public life, health, and property, we can make no mistake.

Because recognition by the public of our importance and worthiness does not assure to us any material benefits, our Society was formed to further the interests of the engineer, and to represent the profession before the law-making bodies and the public in general.

We think it especially fitting at this time to re-read thoughtfully the objects of our Society as set forth in our Constitution. Since this paragraph sets forth more clearly than we can all the reasons for supporting our organization, we are reprinting it here:

Article II—Objects

The objects of this Society are to represent the body of Professional Engineers in all branches of the profession, and the Surveyors, with a view of promoting the public

interest as affected by the services of the Engineer and Surveyor, and safeguarding and strengthening the professional body for this purpose; to advance the scientific, professional and economic interests of the Engineer through research, promotion of technical and scientific information, legislation, care of public relations and maintenance of the integrity of professional practice; to cultivate fraternal feeling and cooperation among the members of the profession; to secure them intelligent unity and harmony of action; and to cooperate with national, state and local engineering societies.

Ours is a young society, and we feel that much has been accomplished in the first seven years of our existence, but there is much more yet to be done. Let each and every one of us add our support to this movement to improve the standing of our profession.

PENNSYLVANIA

Information Concerning the Pennsylvania Society of Professional Engineers

Incorporated at Philadelphia, Pa., February 1934. The P.S.P.E. is an active member of the National Society of Professional Engineers, comprising at the present time twenty-three State Societies, grouped largely in the Eastern half of the United States.

Ten local Chapters comprise the P.S.P.E., which covers the entire Commonwealth. Admittance to the P.S.P.E. and the N.S.P.E. is through the local Chapters; the dues ranging from $3.75 to $5 for the present *half* year.

Chapters	*Secretaries*
Philadelphia	Henry F. Bamberger, 817 Roosevelt Blvd., Philadelphia, Pa.
Pittsburgh	Benjamin H. Aires, 610 Maloney Bldg., Pittsburgh, Pa.
Erie	Fred W. Talbot, 1673 W. 11th St., Erie, Pa.
Midwestern	Frank L. Clepper, 72 Vine St., Sharon, Pa.
Reading	Leroy F. Christman, 101 Endlich Ave., Reading, Pa.
Lehigh Valley	Allen G. MacMillan, 311½ S. 15th St., Allentown, Pa.
Johnstown	Warren H. Hinks, 1004 Johnstown Bank & Tr. Bldg., Johnstown, Pa.
Northeastern	Samuel G. Mastriani, Court House, Scranton, Pa.
Harrisburg	W. W. Seltzer, 2616 Reel St., Harrisburg, Pa.
Greensburg	Frank E. Maddocks, 351 Harrison Ave., Greensburg, Pa.

Applications for membership should be sent to the nearest Chapter Secretary.

State Headquarters of the Society is located at 29 South Third Street, Harrisburg, Pa. The Headquarters of the National Society is in the National Press Building, Washington, D. C.

The P.S.P.E. is non-political, except when the welfare of the Engineer is in danger, when we expect all members to forget party lines.

The religion of the members is their private affair.

This is not a technical Society. This phase has been left to the Founder Societies.

The P.S.P.E. was originated to advance and protect the economic and professional interests of the engineer, individually and collectively, through united effort, legislation and public relations; to strengthen, unify, extend and enforce State legislation protecting the public welfare, the practice of engineering, and the designation "Engineer"; to protect the engineer against exploitation, unprofessional competition, unlawful encroachment, and restriction of rights of practice; to wage a militant campaign for more adequate compensation for engineering services; to promote cooperative and fraternal relations within the profession; to conduct a planned campaign for the advancement of the engineering profession in public recognition, confidence and esteem.

We have been working on these objectives and progress is being made. However, if all the nearly four thousand Registered Professional Engineers in Pennsylvania were members of this Society, the work of the Society would be greatly increased in effectiveness and the time required for the accomplishment of our objectives would be considerably reduced.

YOU SHOULD BE INTERESTED to learn that action has been taken by Executive Secretary Russell Conrad relative to the rapid change of personnel among State employes with the more experienced and valuable Engineers and technical men seeking the more inviting and lucrative positions available due to the step-up in industry and government activity for national defense and similar issues. Such a condition would soon find our State Departments lacking in properly trained men to carry on the work ahead.

Appeals have been made to Governor Arthur H. James and Highway Secretary Lamont I. Hughes, with copies to the Secretaries of all State Departments, from Secretary Conrad and President James J. Skelly, of the Associated Pennsylvania Constructors, requesting . . . ". . . that measures be taken to retain the present trained engineering and technical employes in the various Departments of this Commonwealth, and to obtain for them security and proper remuneration consistent with their positions and responsibility."

Harrisburg Chapter

The following Chapter officers were elected to serve for the ensuing year—1941:

President	Engineer Ritchie Lawrie
Vice-President	Engineer H. Hershey Miller
Secretary	Engineer W. W. Seltzer
Treasurer	Engineer E. A. Weimer
State Director	Engineer HuBert C. Eicher
Executive Committee	Engineer C. Radford Berry
	Engineer Kenneth Caskey

Pittsburgh Chapter

Engineer Earl Dwight Covell of the Pittsburgh Chapter contributes an Editorial to each month's issue of the Pittsburgh Engineer. We congratulate him and commend him for his constant work for the profession.

The Engineer's Responsibility to Society

"It Is Enough For Me To Do My Duty; As For Other Things, I Will Not Be Disturbed About Them." Marcus Aurelius.

For the past several years there has been much sincere discussion of the subject of the responsibility of the Engineer for technological unemployment.

This discussion arises from the fact, generally recognized by all thinkers, that the very rapid advance of Applied Science has outdistanced Sociological adjustment to the regime of quantity production. The result is a widespread, but more or less temporary, condition of unemployment which, in many cases is wiped out eventually by an increased demand for workers in industries devised by Engineers and founded upon new and improved processes and related services.

However, who shall place the responsibility for this unemployment with its great social problems which tax the ingenuity of the highest authorities in their solution?

Are these problems really the province of the Engineer? What of the parlor Sociologists; the Political Economists; the Educators? What are they doing to reach a solution?

The Engineer, generous in his acceptance of civic responsibility, has discussed these problems in his learned Societies. He recognizes that he must lend his splendid technical equipment to a solution. Does he, perhaps, need to stop to think that primarily such solution is not his job?

Let the Engineer, first of all, continue his leadership in bringing about the universal application of science to the problems of production, lend his technical ability, as far as his crowded days will permit, for civic betterment, but; let him also insist that others shoulder their full responsibility in the solution of the Social aspects which arise from technological achievement.

EARL DWIGHT COVELL
LEHIGH VALLEY CHAPTER

V. W. ANCKAITIS, EASTON, INSTALLED AS NEW PRESIDENT OF ORGANIZATION

The annual dinner meeting of the Lehigh Valley Chapter of the Pennsylvania Society of Professional Engineers was held January 10 at the Elks Club, 21 S. 8th St., with election and installation of officers the principal order of business for the evening. Prof. H. G. Payrow, Lehigh University, retiring president, presided as chairman of the meeting.

V. W. Anckaitis of Easton, connected with the Tilghman Moyer Co., Allentown, was installed as president for the new year. Other officers elected and installed were: A. G. MacMillan, Allentown, secretary; C. T. Shoch, Allentown, treasurer; A. R. West and W. R. Schnable, Allentown, chapter directors; Prof. W. S. Lohr, Lafayette College, immediate past state president, state director.

The principal speaker was Frederick H. Zurmuhlen, president of the New York State Society of Professional Engineers and member of the architectural firm of Sibley; Fetherston and Zurmuhlen. A prominent consulting engineer and architect on many national projects his address, pointing out the importance and prominence of the engineer's part in promoting the welfare of our country, was based on his wide experience. Comparing his fellow members with those in more prominent professions he urged them not to shirk the part they play in current life and cautioned them to prepare for a more essential role in the reconstruction period to follow the turmoil of war.

Mr. Anckaitis delivered a report of the ethics and practice committee which has been actively engaged in guarding against the illegal practice of engineering by unregistered engineers and kindred associates.

Guests at last night's meeting included three members of the Reading chapter of the Society: C. W. Wertz, president Reading chapter: L. R. Christman, secretary Reading chapter, and W. R. Smith, assistant to the Society's state president.

TEXAS

REPORT OF ANNUAL MEETING

The Texas Society of Professional Engineers held its fifth Annual Meeting at Austin, Texas, January 10 and 11, 1941.

Among the principal topics for discussion at this meeting were a report on a brief of the Texas Engineers' Registration Law, which had been prepared by an attorney employed by the Society for the purpose of determining what can be done to make the existing law fully effective, particularly with reference to securing more rigid enforcement.

Since the enactment of the law, certain legislative appropriation bills and rulings of the Texas Attorney General have hampered the complete administration of the law as originally intended. As the aims, purposes and objectives of the Texas Society are to aid in every way at its command in the enforcement of the law, the Society has decided to employ this legal assistance in conducting a study of the registration act and subsequent rulings.

The Program:

Friday, January 10, 7:00 P.M.

Pre-Conference Fellowship Party and Smoker, Mezzanine Floor, Honoring Edward Larson, Executive Secretary of the National Society of Professional Engineers.

Saturday, January 11

Morning

Chairman: T. B. Warden, Engineer Manager, Texas Cement Industries, Austin, and Past President of Travis Chapter, Texas Society of Professional Engineers.

Crystal Ball Room

Address of Welcome: Mayor Tom Miller, Austin.

Response: Walter E. Seaholm, President of Texas Society of Professional Engineers.

Purpose of the Engineers' License Law and What it Should Accomplish: James P. Exum, Senior Designing Bridge Engineer, Texas Highway Department.

Some Practical Problems in the Administration and Enforcement of the Engineers' Registration Law: Honorable C. M. Kennedy, Former Assistant Attorney General, Austin.

Discussions By:

D. C. Greer, State Highway Engineer, Texas Highway Department, Austin.

Gibb Gilchrist, Dean of Engineering, Texas A. & M. College, College Station.

E. L. Myers, Consulting Engineer, Dallas.

J. S. Hurnall, Petroleum and Geological Engineer, Tyler, and Member of Texas Board of Registration for Professional Engineers.

Afternoon

Chairman: H. R. F. Helland, Consulting Engineer, San Antonio, and First Vice-President of Texas Society of Professional Engineers.

Professional Needs and Assistance Required by Young Engineers: Julian Montgomery, Consulting Engineer, Austin.

Accomplishments of the Texas Society of Professional Engineers: Walter E. Seaholm, Superintendent Austin Water and Light Department, and President of Texas Society of Professional Engineers.

The Industrial Engineer and the Defense Program: Irwin A. Uhr, Engineer Manager, General Electric Company, San Antonio.

Necessity of a National Society of Professional Engineers: Harry E. Nold, Professor of Mining Engineering, Ohio State University, Columbus. Ohio.

Business Meeting of the Texas Society of Professional Engineers.

Evening

DINNER—DANCE
Informal
Crystal Ball Room—Driskill Hotel

Master of Ceremonies: John D. Miller, 1941 President, Texas Society of Professional Engineers.

Introduction of 1941 State and Travis Chapter Officers and Honor Guests.

Address: The Value of Military Engineers in National Defense: Colonel Ike Ashburn, Executive Vice President, Texas A. & M. College, College Station.

WASHINGTON

SEATTLE CHAPTER

January 17, 1941

Dave S. Cohen,
Director of Licenses
Olympia, Washington

Dear Sir:

This is to advise you that Seattle Chapter, Washington Society of Professional Engineers, by unanimous vote has approved the amendment of the Engineers Registration Law as transmitted to you by its President J. E. Wickstrom under date of January 9, 1941, and instructed that you be furnished with a copy of said resolution of approval, which is as follows:

WHEREAS, the Washington Society of Professional Engineers was formed by the Engineers required to be licensed under the provisions of Chapter 167, Laws of 1935, for the purpose of representing all Engineers coming under the provisions of said law, and

WHEREAS, said Society was duly and regularly incorporated under the Laws of 1907, Sec. 3888 to Sec. 3900 Rem. Rev. Statutes of Washington and is State Chapter 20, National Society of Professional Engineers, and

WHEREAS, the act as originally proposed for licensing of the practice of engineering, and sponsored by: Western Washington Section A. S. C. E., North Pacific Section A. I. E. E., Western Washington Section A. S. M. E., Seattle Section A. I. E. E., Seattle Chapter A. A. E., Tacoma Engineers Club, and Associated Engineers of Spokane, was, on final passage, so amended and otherwise changed by the 1935 Legislature, prior to passage, that experience has proven the law practically unenforceable, due in part to diversion of all fees paid thereunder into the State General Fund, also in part to lack of adequate enforcement provisions, and in part to improper exemptions, and other items, which are objectionable to the Engineers required to be licensed and registered under the provisions of said Law of 1935, and

WHEREAS, the membership of Washington Society of Professional Engineers comprises all classification of Engineers required to be licensed and registered under the provisions of said law, and this Society is the only organization having the authority and right to represent the Professional Engineers and Land Surveyors, and

WHEREAS, the State Board of Trustees of W. S. P. E. has formulated and approved certain amendments to the existing law, now therefore,

Be It Resolved, that Seattle Chapter, W. S. P. E., after full consideration and discussion, hereby approves the proposed amendments to the existing law relating to the practice of the Profession of Engineering, Chapter 167, Laws of 1935, as prepared by our Legislative Committee, and

Be It Further Resolved, that the Secretary forthwith transmit, a copy of this resolution to the Director of Licenses at Olympia, Washington, and copy to our State Executive Secretary, and copy to our National Executive Secretary with request for appropriate action.

Merlin E. Custer, *Sec.*,
Seattle Chapter W. S. P. E.

WEST VIRGINIA

By direction of the president the Board of Directors of the West Virginia Society of Professional Engineers met at the Kanawha Hotel at Charleston, Saturday, December 14.

Those present included the following: M. L. O'Neale, president; H. W. Saunders, second vice-president; Robert Williamson, Jr., secretary-treasurer; Charles Snyder, director elect; George C. Barnes, Jr., director elect; J. M. Clark, Sr., director; Kyle L. Bruce, director.

Those present by proxy were: H. A. Levering, director; A. O. Baxter, director; J. Paul Blundon, director; Theodore Bloecher, Jr., vice-president elect; John R. Seckman, director; R. P. Davis, past president.

A motion was adopted providing that the eighth annual convention of the Society be held in the city of Bluefield in the fall of 1941 on Thursday, Friday, and Saturday of a week to be designated by the president. It was suggested that, in setting the date of the meeting, proper consideration be given to other scheduled events and a date chosen to avoid interference with them if possible.

The main purpose of the Directors was to carry out the mandate of a resolution adopted at the seventh annual convention which authorized the Board to set the dues for 1941. General discussion of the opinions of the individual members who had expressed themselves in answer to a questionnaire sent to them, and also from the majority of chapters, brought about the definite conclusion of the Board that a permanent organization for the Society should be set up. It was the opinion of the Board that an executive committee should be elected to perform the duties of the Board of Directors between meetings, that the office of secretary-treasurer should be discontinued and that the new office of secretary should be established. The secretary was authorized to establish a permanent headquarters for the Society, employ the necessary clerical help, and combine the work of the secretary with that of the editorship and business management of the magazine.

An executive committee of six members, three of whom would constitute a quorum, was named to act for the Board. Members are as follows: Robert Williamson, Jr., Chairman, Ernest L. Bailey, J. M. Clark, Sr., Kyle L. Bruce, G. C. Barnes, Jr., Charles Snyder.

A motion was adopted to elect Ross B. Johnston, Charleston, secretary of the Society, effective January 1, 1941.

The secretary was authorized by and with the consent of the executive committee to select and acquire suitable headquarters, furnish the same, and employ necessary stenographic assistance within the limits of the budget to carry on the functions of the office.

It was specified that no commitments be made by the secretary, without the consent of the executive committee, which would extend beyond a thirty-day period.

It was ordered that bonds be furnished by both the secretary and treasurer for the satisfactory performance of their duties.

The state dues were ordered payable as follows:

Members	$4.00 per annum
Associate members	$3.00 per annum
Junior members	$1.00 per annum

Provision was made that dues for a half year might be collected on the basis of annual dues shown above.

The secretary was instructed to discontinue the past practice of mailing membership cards to chapter secretaries in advance. It was provided that the chapter secretaries will make requisition to the state secretary for membership cards as required, accompanying such requisitions with remittances of dues.

Shadows of Coming Events

(From page 5)

engineer has been pronounced and emphatic, and an increasing number of engineers are finding employment with the several agencies of the Federal government; we may as well look forward to an expansion of this policy and a consequent increase in the number of engineers who must find employment with the government. What will be the conditions of employment as regards compensation, tenure and promotion?

All of these movements and their counterparts in other countries represent ineffectual attempts to secure for individuals and nations that illusive state of being called "economic security." While the term is loosely employed to mean any one of many levels of economic well-being, basically it means an assured income at a level that will provide the food, clothing, education, and shelter adequate for sound health, with a margin over for cultural pursuits.

The methods adopted by nations seeking to establish economic security for their people usually have only resulted in the transfer of some of the income of high producers in the population to the low producers. Thus while greater security was provided for some of the population, less security was left for others. The inevitable long-time trend of any such system is to lower the actual production of all the higher levels of producing ability and the final state is worse than the initial.

The methods heretofore employed in the attempt to reach economic security foreshadow further efforts as the dislocations of the World War and our own defense efforts begin to have their inevitable effect on the economic life of the nation.

The engineering approach to the solution of this problem would be to devise products and production and distribution methods based on the conditions of a machine age that will enable the individual of low producing capacity to produce at a level above minimum substance requirements. In the long run economic security cannot be supplied by any system of social organization. It must be achieved by the individual. Eliminating those mentally and physically deficient, the only permanent means whereby an individual may achieve economic security is by producing goods or services to exchange therefor.

It is suggested that the attack on this problem involves these steps:

1. Recognition that production is the basis of security.
2. Educational programs in the public schools to prepare for production.
3. Elimination of customs, laws, industrial or government policies or other barriers that may hamper the development of facilities to aid the individual in producing goods and services.
4. Realization that a certain portion of the population, amounting to perhaps 5 per cent or more, is incapable of producing its own subsistence. This group seems to be growing in size but the problems presented thereby must be left to the biologist and the sociologist.
5. A concerted attack by production engineers on devising methods of utilizing persons of low producing capacity in such a way that they can achieve at least a decent subsistence standard of living.

The problem of item five is fundamentally one of engineering and, if solved at all, must be solved by the engineer and the industrialist. Great progress has been made in this direction in the mass production industries, but much still remains to be done. The ultimate system will not appear over night but must evolve slowly out of weary hours with the drafting board, the flow sheet, the organization diagram and heartbreaking trial and revision. The only reward to be expected by any engineer who contributes an idea or a plan will be the high regard of his fellow workers and the personal satisfaction of having done his bit.

The possibility of solving this stupendous problem of human engineering ought to be a ringing challenge to you and me and all the Sons of Martha. The present situation is aptly expressed in the following words from Kipling's "Sons of Martha":

"And the Sons of Martha smile and are blessed—
they know the angels are at their side,
They know in them is the Grace confessed,
and for them are the Mercies multiplied.
They sit at His Feet, and they hear The Word,—
they know how truly the Promise runs.
They have cast their burden upon the Lord, and—
the Lord He lays it on Martha's Sons."

The Engineer's Preparedness

(From page 8)

that which much concerns the National Society of Professional Engineers. Deeply desirous that our future professionals shall be worthy to carry higher the standards of engineering we have already set forth certain ideals we wish to see embodied in program and practice of our engineering schools. We are gratified that the engineering educators have gone far in recognizing these ideals in principle although differing still from us in detail. It would seem possible that now, in this time of crisis, our thinking has advanced in social understanding so that we are now ready to make further urging upon the schools, urging upon all our schools, secondary as well as collegiate, so that the influence of this great democratic agency shall be inspirational of faith in the ethical and spiritual bases of democracy, so that our educational system shall deliberately assign itself the task of producing social leaders, spiritually and intellectually and personally competent, shall deliberately plan to give at the least as much time to training in character as to training in any major scholastic discipline. The knowledge and understanding for such a reorientation of educational task are now available and here and there the men who are competent to serve in the work. If the National Society of Professional Engineers and other bodies of professional men in this country unite in urging this service of democracy and spiritual man upon our schools and colleges we may well have hope that our school administrators will heed our call and that thus we shall be instrumental in advancing that preparedness without which all our defense measures are doomed to defeat regardless of their efficacy against an external foe, the turning of our people in simple faith to the Father-Spirit of us all, whose in-dwelling is the cosmic fact which makes democracy sacred, the outer expression of the potential divinity of man.

Transition

(From page 10)

Present Modification and Improvements.

A consideration of the present is worth contemplation for it is here that the necessary groundwork must be laid to effect future changes.

As regards engineering education the four year course exists almost universally in this country and for the majority of students this is sufficient. Most of the engineering courses are standardized, but there is a growing tendency, in this respect, to break with the past. How far this can be carried with curricula based on four years' duration remains to be seen. All indications are that such breaks will be gradual due to the time limit imposed.

Engineering teachers, working as a unit, could be more effective if they would set up a process of elimination whereby those students are removed who lack engineering aptitude, but unfortunately, have a misdirected ambition and desire to follow the profession. This is a most unfortunate group, larger than generally realized or admitted. To eliminate it early is performing a favor, for it is this class who, later on if allowed to continue, will actually turn an accusing finger on its former sponsors. Many such individuals have talents in other fields and a teacher who is sincere will strive to discover just what these may be.

Often the argument is raised is it possible to make such a selection of entering students that further elimination is unnecessary. While this sounds plausible no scale has yet been devised whereby qualifications can be absolutely measured. The best that can be done is to eliminate the too poorly prepared and definite misfits.

Teachers in the academic departments could also render a service by watching for those students who seem to be equipped with engineering minds and guiding them accordingly. This would be an ideal condition, but the total failure of it is attested by the all too few who make their debut into engineering in this manner. Consequently, many fine young men never arrive in their proper profession, or only arrive after traversing a circuitous route.

Most important of all should be the creation of a professional atmosphere in our engineering schools. This is admittedly difficult under the present four year arrangement and consequent immaturity of the student body. However, by means of proper faculty and administrative supervision, it is surprising the results that can be accomplished. To leave this to the students themselves is ineffective considering that the best of them are little more than three years out of high school. Many schools and educators can justly be called to account on this score!

At present it would be possible to guide some of the more select students into a six year program as a basis for future development. Many of our universities carry in their yearly catalogue announcements that such a program exists. The difficulty with this is that the announcement is just about the extent of the entire program. Such a plan must be actively sponsored and pushed with the utmost zeal. The fault probably lies with the engineering administration, though it is not a malicious one. Most administrations are so overworked by the details of the conventional set-up that it is well nigh impossible to assume an extra burden, especially when it will show no tangible results for a long period of time. Conversely, it is not reasonable to expect an immature student to make such a momentous decision particularly when he will be apart from most of the others in his efforts. However, if by some means such a program could be sponsored and receive active support in the schools throughout the country, a basis would be laid for a future trend in engineering education that is essentially correct.

The Engineering Teacher.

In conclusion a few remarks concerning the engineering teacher and his methods might be relevant.

In the university group of teachers his lot is perhaps the most difficult. To begin with, he is attempting to fit a man for a profession in a period of time the other major professions have long discarded. His colleagues, in fields other than engineering, often raise their eyebrows at this and question the relative worth of his efforts, with an attitude that all engineers are "transit gazers" and the subjects taught not much more than on a vocational level.

The educational qualifications of the average engineering teacher are usually excellent, but his professional experience leaves much to be desired. The latter condition is generally no fault of his, but can be placed squarely on the shoulders of university administration. Instructors, from which a teaching force is built, are mostly chosen from the ranks of the senior students, being obtained in this way with a minimum of financial expenditure. In contrast to this, an engineering teacher should have a minimum of four or five years' professional experience before being permitted to teach a professional subject. Such an arrangement would be initially expensive, but in the long run would definitely prove its worth. Very few schools have any policy on this matter.

Engineering teachers have many lessons to learn in the science of teaching. There is much more to the handling of a course than merely following text-book assignments day by day and the routine solution of a vast number of problems. A well-outlined and well-taught course should have a breadth and range of subject matter clustering around the central details that definitely ties it in with the practices of engineering and that also leads to adjacent fields of thought. Text books cannot be written to do this! It is only by such methods that the student can gain an integrated view of the entire field.

Hoehler *(From page 12)*

construction which will follow, use the same basic methods. The engineer, the economist, the public administrator, all, depend upon information and methods that are understandable and which can be manipulated in various ways. Fact find, the use of statistics, the development of principles and the practical application of these operations to the problems of life are the concern of all of us.

The President once said that the engineer must assume a role of leadership in the society of tomorrow. For me to reiterate that observation out of its context would be shallow flattery. You and I have long recognized that engineers will not be alone in that leadership. You will be flanked by social scientists, public administrators and by leaders from other professions.. None of us would want a dictatorship of a single profession.

The engineer will, in the future, move from the world of private enterprise and limited fields of public administration to the council of leadership where he will apply the basic factor of design to the social problems of this age.

This, therefore, is a plea that you maintain an emergency from the technical confines of your profession, that you do even more in this task of informing yourselves about the strains and stresses to which people are subjected—whether classified as in the realm of economics, sociology, political science or what not. And last, that in your schools you insist upon the student receiving a broad basic education upon which he constructs his understanding of the techniques of your profession and thereby makes himself of greater potential usefulness to society.